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## SEVERE VALVULAR PULMONARY STENOSIS WITH NORMAL AORTIC ROOT\*

### IMMEDIATE RESULTS OF TRANSARTERIAL VALVOTOMY, WITH NOTES ON THE CLINICAL ASSESSMENT OF PATIENTS BEFORE AND AFTER OPERATION

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#### INTRODUCTION

SINCE THE FIRST valvotomies were performed for severe congenital pulmonary stenosis with normal aortic root,<sup>1,2</sup> large numbers of patients with this malformation have undergone surgical treatment.

Initially the valve was attacked indirectly through the right ventricular wall. With incision and fracture of the dome stenosis, a severe valvular obstruction was converted to a moderate one with corresponding reduction in right ventricular pressure postoperatively. Mortality was low and results were consistently good in Brock's hands.<sup>3</sup> Other surgeons obtained less uniform success.<sup>4</sup> In some cases an inadequate reduction in right ventricular pressure postoperatively was found to be due to the presence of an unsuspected associated infundibular obstruction,<sup>5</sup> but in many cases it became obvious that the reason the right ventricular pressure was not reduced enough was inadequate division of valve tissue.

In younger children and infants the ease with which the rubbery dome of the severely stenosed pulmonary valve admitted knives and large dilators without influencing the degree of stenosis was demonstrated by Keith.<sup>6</sup> This type of result led Swan<sup>4</sup> to attempt excision of the valve stenosis by an approach through the pulmonary artery utilizing hypothermic techniques. The first report of five cases was encouraging, since normal right ventricular pressures and abolition of the pressure gradient across the valve resulted, but concern was

expressed at the production of pulmonary valve incompetence.<sup>7</sup>

Poor results in younger patients at the Hospital for Sick Children, Toronto, led us to abandon the transventricular approach in favour of a modified Swan technique in January 1956. This paper presents the immediate results of the newer method of treatment in 21 cases of severe valvular pulmonary stenosis with normal aortic root operated on between January 1956 and August 1957. In this period 24 patients underwent operation with one death. Twenty-one of the 23 surviving patients have been studied by preoperative and postoperative cardiac catheterization.

#### MATERIAL AND METHODS

##### 1. *The Patients*

The average age of the 21 patients is 6½ years and the range, 8 months to 16 years. Four are under 2 years of age, 7 are between 2 and 5 years of age, 5 are between 6 and 10 years of age and 5 are more than 10 years old. There are 11 males and 10 females in the series.

The diagnosis was made on clinical grounds in all cases. Electrocardiography was performed with standard techniques using direct writing equipment. The severity of pulmonary stenosis was confirmed preoperatively by cardiac catheterization. In 15 cases this study was done two days before operation while in 6 others the catheterization was performed at varying intervals up to two years previously. Cardiac catheterization was repeated on the 9th postoperative day on the average (range, 7th to 15th day).

Three of the 21 patients had had previous Brock operations without relief as judged by cardiac catheterization. These were Cases 5, 8 and 18, operated upon at 2 years, 4 years, and 4 years respectively.

##### 2. *Surgical Technique*

The preoperative sedation is by meperidine (Demerol) and atropine in routine doses. Thiopentone (Pentothal) induction is followed by a relaxant (usually succinylcholine), endotracheal nitrous oxide with controlled respiration being employed throughout the remainder of the procedure. Infants are placed in a water bath at 40° C. and the temperature is lowered to 34° C. by addition of

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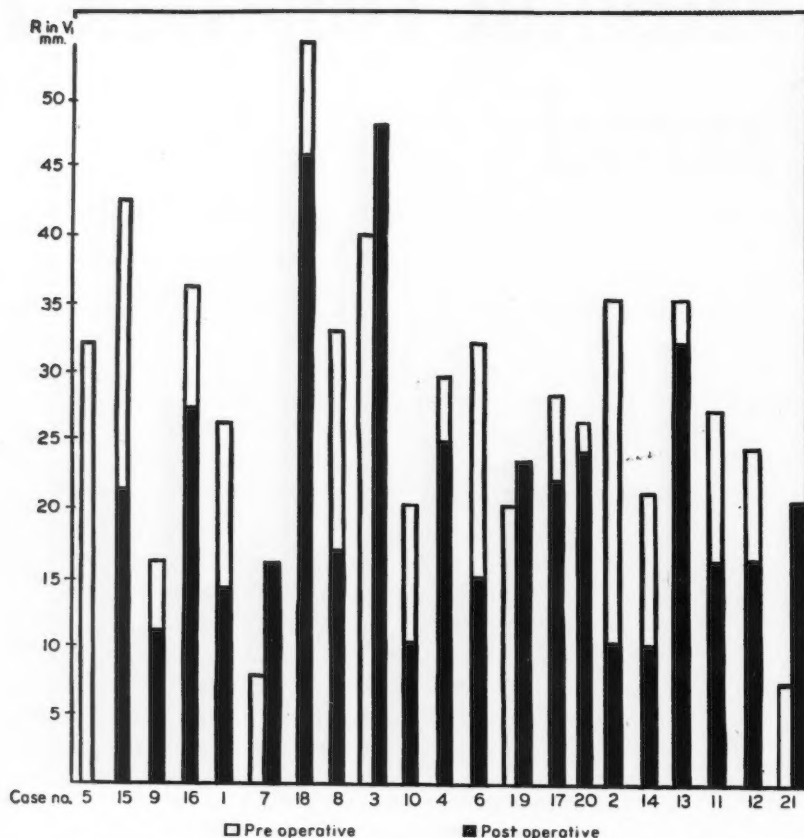


Fig. 1.—The electrocardiogram in 20 patients with severe valvular pulmonary stenosis with normal aortic root. The height in mm. of R in  $V_1$  before and after operation.

ice. The infant is then placed on a refrigerating blanket and after a drift to about  $31^{\circ}$  C. rewarming is commenced. With older children blanket cooling is used with ice cubes covered in cellophane bags placed under the blanket till the temperature reaches  $33^{\circ}$  C. Drift to  $31^{\circ}$  is then permitted, at which level rewarming is started. Infants cool and drift much faster than the older children and have required close watching. Cardiac irregularities are very rare above the level of  $30^{\circ}$  C. and we feel this to be a perfectly safe level of hypothermia.

A midline sternal splitting incision is employed, care being taken to reflect the pleura from the under surface of the sternum and not enter either pleural cavity. The thymus gland is dissected back, the pericardial sac is opened and the dilated pulmonary artery palpated for the presence of a jet and the cone of the pulmonary valve. The infundibulum is examined for the possibility of infundibular stenosis. Tapes are placed around both superior and inferior vena cava within the pericardium and these tapes are passed through rubber tourniquets. No attempt is made to dissect the pulmonary artery free of the aorta. The pericardium is simply cleared down some distance to allow the placing of a curved Potts' clamp across the pulmonary artery from the left side, avoiding the tip of the atrial appendage. Two stay sutures are inserted a distance of about 3 cm. apart in the pulmonary artery about 1 cm. from the valve ring. These stay sutures are then picked up and a curved Potts' clamp is placed beneath them to include a

portion of the pulmonary artery which is divided with the clamp on. A suture is then put in the end of this incision, tied and left on the needle driver for closure later; two other stay sutures are used to retract.

The superior and inferior vena cava are then occluded in turn, the heart is allowed to empty, the clamp is placed across the pulmonary artery and the clamp removed from the incised area in the artery. The valve is readily visualized and grasped with forceps and delivered into the incised portion of the pulmonary artery. The central orifice is usually of a size allowing the tip of the scissors to be inserted. If it is not, the cone is snipped off to make the opening large enough. Whether to make two or three cuts is a decision that varies with the individual surgeon. Our preference is for two cuts only because of the danger of regurgitation. These cuts are made right through the valve to the ring. At this time the heart is almost completely empty and the tape on the superior vena cava is loosened to allow blood to flow in

and flood the right atrium, closing off the foramen ovale and preventing any possibility of air embolism. Just before the clamp is replaced on the incisional area of the pulmonary artery, the tape on the superior vena cava is completely released and the blood is allowed to well up and fill the right ventricle and the pulmonary artery down to the clamp and then the clamp is applied over the incised area. The pulmonary artery clamp is removed and the inferior vena cava tape is removed. The usual length of circulatory occlusion varies between  $1\frac{1}{2}$  and 3 minutes. The patient is then re-warmed with the warming blanket to  $34^{\circ}$  C. before returning to the recovery room.

## RESULTS

### 1. Physical Signs

(a) *Cyanosis*.—Six of the 21 patients were cyanosed preoperatively (Cases 2, 7, 8, 10, 14 and 18). This ranged from gross cyanosis with clubbing to slight cyanosis on exercise. In all cases cyanosis was abolished postoperatively.

(b) *The second heart sound in the pulmonary area*.—At preoperative auscultation that part of the second heart sound due to aortic valve closure was obscured by the systolic murmur in 20 patients; in these, pulmonary valve closure was either absent (8 cases) or extremely faint (12 cases). In one case (Case 12) a widely split sound was audible preoperatively. Postoperatively, detailed analysis of the second sound was available in only 10 patients.

In these aortic valve closure was audible in all except one case (Case 5). Pulmonary valve closure was audible and thus a distinct split was heard in 5 patients (Cases 8, 11, 12, 18 and 21) while in the other 5 (Cases 1, 4, 5, 9 and 20) there was no change in the pulmonary valve component of the sound. Only 2 of those patients whose second heart sound in the pulmonary area was unchanged had right ventricular pressures of 60 mm. Hg or below in systole, whereas all of those who developed a split sound had right ventricular systolic pressures of 60 mm. Hg or less postoperatively. Recent phonocardiographic studies have related more precisely the width of splitting to right ventricular systolic pressures,<sup>12</sup> and there is no doubt that routine use of high-frequency phonocardiography will provide more uniform and objective information in the assessment of these cases before and after operation.

(c) *Murmurs*.—A very harsh, stenotic, systolic murmur of Grade V (Levine) intensity with thrill was audible in 19 of the cases. In 2 cases the murmur was of Grade II-III intensity (Case 7 with gross obesity and Case 19 with a minute orifice in the pulmonary valve at operation). Postoperatively the systolic murmur was usually reduced by two intensity grades and a thrill disappeared. In one case there was no change in murmur or thrill (Case 15).

No patient had a diastolic murmur of pulmonary incompetence preoperatively. Immediately postoperatively only one case (Case 8) had this type of murmur and it was of Grade III intensity. At eight-month follow-up, two further patients (Cases 3 and 6) had a pulmonary diastolic murmur, while two (Cases 8 and 1), seen 3 and 9 months postoperatively respectively, did not have pulmonary incompetence. The remainder have not yet been examined.

## 2. Radiological Signs

In 17 of the 21 chest roentgenograms taken preoperatively, the cardiothoracic ratio exceeded 0.50 in 12 cases and 0.55 in 5 cases (Cases 1, 3, 8, 13 and 18). Postoperatively there was no immediate change in heart size.

## 3. Electrocardiography

Severe right ventricular hypertrophy, frequently with right atrial hypertrophy preoperatively, was converted to a more moderate degree of right ventricular hypertrophy by the operation. Particular attention was paid to a decrease in voltage of R in lead V<sub>1</sub> as a measure of this electrocardiographic improvement. The voltage of R in V<sub>1</sub> was reduced immediately postoperatively in about two-

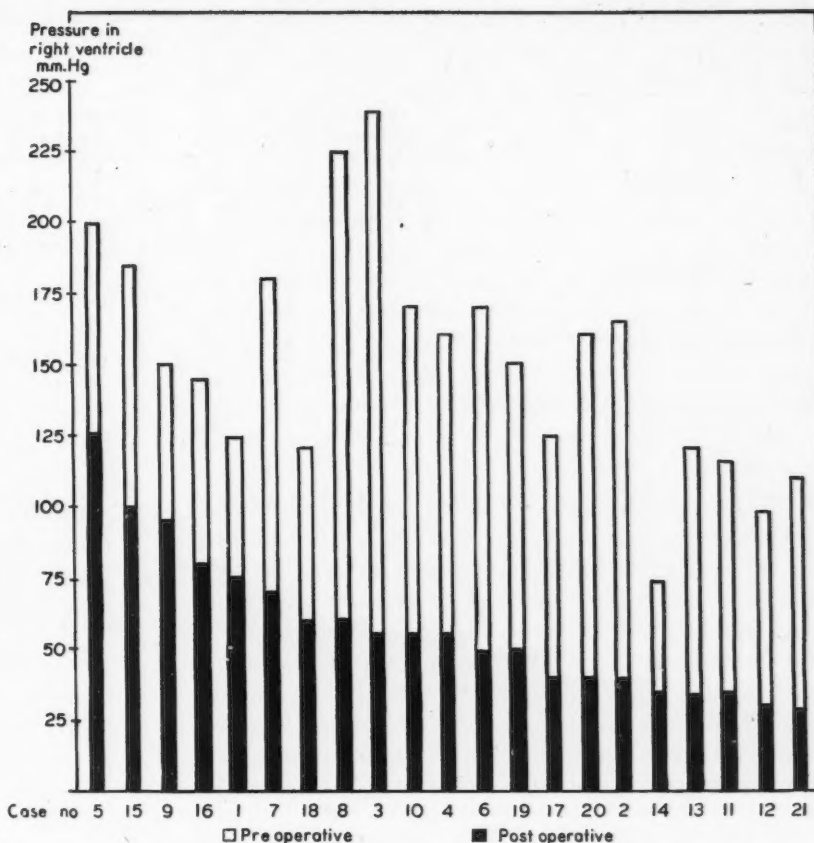


Fig. 2.—Cardiac catheterization in severe pulmonic valvular stenosis with normal aortic root. The systolic right ventricular pressure in mm. Hg before and after operation.

thirds of the patients. In the remaining one-third there was no change (Fig. 1).

## 4. Cardiac Catheterization

In right atrial pressure tracings of the 21 patients the "a" wave exceeded "v" by more than 3 mm. in 12 cases preoperatively (Cases 1, 2, 5, 6, 7, 8, 9, 10, 16, 18, 19 and 20) and four postoperatively (Cases 2, 5, 10 and 18).

The right ventricular systolic pressure level preoperatively exceeded 70 mm. Hg in all cases and 109 mm. Hg in 19 patients. The highest value was 240 mm. Hg (Case 3). Postoperatively a reduction occurred in all patients, the systolic level being below 75 mm. in 17 patients (Fig. 2).

Preoperatively the right ventricular pressure pulse was classically that of valvular obstruction, having a symmetrical and rounded form in 17 patients (Table I). In the remaining four the pulse was of a similar type but a deflection of the upstroke suggested the presence of an associated infundibular obstruction. Postoperatively the appearance of the right ventricular pressure pulse was characteristic of valvular obstruction in five patients and of infundibular obstruction in three. In the other 13 the pressure pulse was of normal appearance in that there was a short isometric contraction, an ejection plateau and a short period of isometric relaxation.

TABLE I.—DATA FROM CARDIAC CATHETERIZATION IN 21 PATIENTS REGARDING THE SITE OF OBSTRUCTION TO PULMONARY BLOOD FLOW.

Site of obstruction	Preoperative		Postoperative	
	Withdrawal from pulmonary artery	Character of pressure pulse	Withdrawal from pulmonary artery	Character of pressure pulse
Valvular.....	11 (Cases 2, 4, 5, 7, 8, 9, 11, 12, 13, 14, 15)	17 (Cases 1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21)	7 (Cases 2, 3, 8, 9, 11, 12, 20)	5 (Cases 7, 9, 12, 14, 19)
Infundibular.....	0	4 (Cases 4, 7, 17, 18)	4 (Cases 5, 16, 18, 21)	3 (Cases 5, 15, 18)
Pulmonary artery not entered.....	10 (Cases 1, 3, 6, 10, 16, 17, 18, 19, 20, 21)		10 (Cases 1, 4, 6, 7, 10, 13, 14, 15, 17, 19)	
Normal form of right ventricular pressure pulse.....	0		13 (Cases 1, 2, 3, 4, 6, 8, 10, 11, 13, 16, 20, 21)	

These appearances, coupled with information obtained from pressure records during withdrawal of the catheter from pulmonary artery to right ventricle, led us to conclude that only two of 21 patients (9.5%) had even suggestive evidence of an associated infundibular stenosis preoperatively. In contrast, after valvotomy, infundibular obstruction became evident in five of 15 patients (33%), being of severe degree in three of this number.

5. Operative Mortality and Postoperative Course

In the 24 operations there was one death. This was in a four-year-old girl with a systolic right ventricular pressure of 260 mm. Hg who died from coronary air embolism. There was one case of wound infection and one of respiratory infection, but the postoperative course was usually smooth. One patient (Case 10) had dramatic and immediate postoperative relief from preoperative gross congestive heart failure, and another (Case 19) with extreme hypoxia (arterial oxygen saturation at rest, 31%) improved her arterial oxygen saturation to 91% at rest postoperatively.

DISCUSSION

Examination of this small series of 24 cases of valvular pulmonary stenosis with normal aortic root treated by open operation indicates that the technique is effective and the mortality risk low. Comparison with a similar group of 38 cases treated by the Brock method prior to January 1956 shows that the results are considerably better with the newer technique (Table II). The mortality and percentage of cases not helped have been reduced by at least one-half, while the proportion with moderate improvement or a good result has been almost doubled. A similar trend has been observed by others.<sup>8, 9</sup> It should be pointed out that neither the over-all immediate reduction in right ventricular pressure nor the mortality rate is significantly different in our group operated on by the direct method from those treated by the indirect method by Brock himself. Nevertheless, the results of the indirect operation as performed by most surgeons would suggest that the direct procedure is a more satisfactory method of treatment.

Though all of our recent group of cases have had a significant fall in right ventricular pressure,

TABLE II.—COMPARISON OF RESULTS OF INDIRECT VERSUS DIRECT VALVOTOMY FOR SEVERE PULMONIC VALVULAR STENOSIS WITH NORMAL AORTIC ROOT.

	<i>Trans-ventricular valvotomy</i>		<i>Trans-arterial valvotomy</i>	
Number of patients.....	32		24	
Age range.....	6 mos. to 16 years		8 mos. to 16 years	
Results:		%		%
Operative death.....	4	12.5	1	4.0
Unrelieved or slight relief....	10	32.0	4	17.0
Moderate improvement.....	6	18.5	8	33.0
Good result.....	7	21.5	9	38.0
No follow-up.....	5	15.5	2	8.0
	100.0		100.0	
Slight = Right ventricular systolic pressure > 75 mm. Hg				
Moderate = Right ventricular systolic pressure above 50 mm. Hg				
Good = Right ventricular systolic pressure < 51 mm. Hg				

measured immediately postoperatively, the degree of fall was not uniform. If one accepts an immediate lowering of right ventricular systolic pressure to 40 mm. Hg or less as a good result, then in our cases a good result was achieved in only 43%. Relating the results to age at operation, it will be seen that three-quarters of those operated on up to the age of five years had good results, whereas only 10% of those over five years had a good result (Fig. 3). A poor result was defined as any case in which right ventricular pressure exceeded 75 mm. Hg immediately after operation. This occurred in 19% of our group. Correlation of these results with age at operation shows that there were no poor results up to five years of age but 40% of those over five had this type of result (Fig. 4). Further analysis of these four cases revealed a known incomplete division of the valve in one (Case 9) and postoperative catheterization evidence of infundibular obstruction in three (Cases 5, 15 and 16).

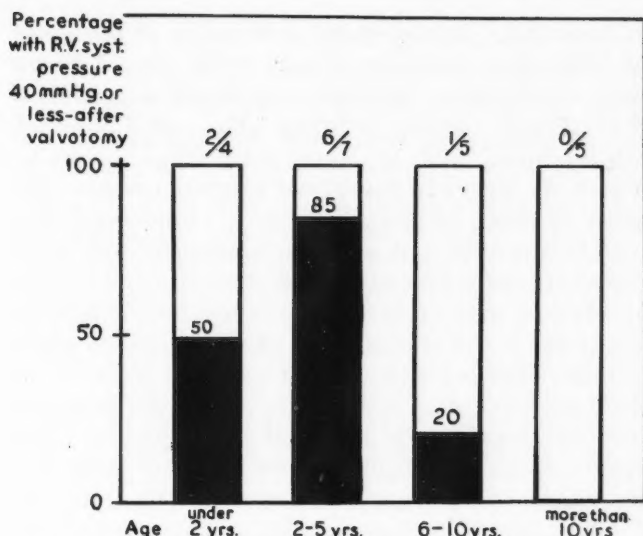


Fig. 3.—The relationship between good result from open valvotomy and age. The percentage of patients with a good result, i.e. a right ventricular systolic pressure of 40 mm. Hg or less, is represented by the shaded area in each age period.

There is some basis for the concept that after adequate valvotomy any residual infundibular stenosis is due to a hypertrophy of the boundary of the outflow tract and particularly of the crista supraventricularis secondary to long-standing obstruction of the valve. This is seen in the anatomical examination of the outflow tract at autopsies of older cases, a feature which has not been noted in infants. Further, three of our five patients with residual infundibular stenosis were over 12 years and all were more than five years old. Finally, after relief of the valve obstruction the right ventricular pressure level, though occasionally high immediately postoperatively, can fall to normal values by the end of one year.<sup>10</sup>

These observations would therefore suggest that early and adequate division of the valve can avoid postoperative elevation of right ventricular pressure due to secondary infundibular stenosis. In older children the chances appear good that after adequate valvotomy any residual elevation of right ventricular pressure may be expected to subside over a period of months or years. Whether a degree of infundibular stenosis constituting a permanent obstruction may be reached in older patients is at present uncertain.

The immediate result of direct operation provides little useful information on the important question of the production of pulmonary valve incompetence by the newer operation. Only time will settle this question definitely. We suspect that valve incompetence may prove to be more common with the newer technique while the surgeon is developing a nice balance in regard to the extent of valve division. But, provided the incompetence is not gross, there need be no cause for concern. It is certainly not a valid argument against open technique.

The physical signs allowing a diagnosis of pulmonary stenosis with normal aortic root are now

well known, having been emphasized by numerous authors since the classical paper of Abrahams and Wood.<sup>11</sup> The physician is interested in two key points about any individual with this malformation. The first is the degree and the other is the site of pulmonary stenosis.

Physical signs each pointing to a severe obstruction are cyanosis, giant *a* waves in the jugular venous pulse, a long harsh ejection systolic murmur, inaudible aortic valve closure and inaudible or reduced and markedly delayed pulmonary valve closure on auscultation in the pulmonary area. Radiographic signs of cardiac enlargement are always serious but by no means an invariable accompaniment of severe stenosis. The electrocardiogram is undoubtedly very helpful; signs of marked right ventricular hypertrophy are the rule. Data from the present cases suggest that if  $R$  in  $V_1$  exceeds 25 mm. in amplitude, the pressure in the right ventricle will exceed 100 mm. Hg and that the converse of this is usually true. One case (Case 9) of the present group was a true exception to this rule in that the  $R$  in  $V_1$  was 16 mm. and the systolic right ventricular pressure was 150 mm. Hg. Three other cases with a voltage of  $R$  in  $V_1$  of less than 25 mm. but high systolic right ventricular pressures were explained respectively by the presence of congestive failure with oedema and effusion (Case 10), extreme hypoxia (Case 19) and extreme obesity (Case 7). Thus a fairly accurate prediction of the systolic level of right ventricular pressure which will be found at cardiac catheterization is possible.

The site of obstruction is less easily determined. At the outset one may conclude that isolated infundibular stenosis or stenosis of the pulmonary artery distal to its valve of severe degree is uncommon; probably they together represent less than 10% of the total cases. A low position of the site of maximal intensity of the murmur is unfortun-

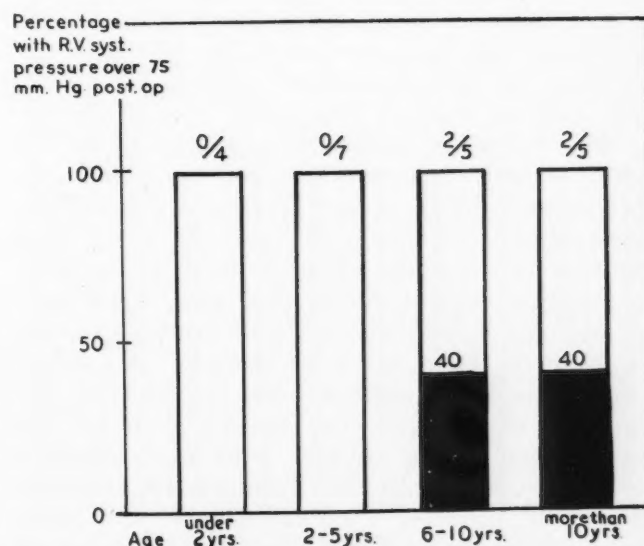


Fig. 4.—The relationship between poor result from open valvotomy and age. The percentage of patients with a poor result, i.e. a right ventricular systolic pressure of 75 mm. Hg or more, is represented by the shaded area in each age period.

ately not a reliable guide to the site of stenosis. The second sound in the pulmonary area has the same characteristics in either severe infundibular or severe valvular stenosis.<sup>11</sup> A loud, normal or closely split second heart sound in the pulmonary area occurs in supra-valvular stenosis. Clinically the only helpful sign differentiating infundibular from valvular stenosis is radiographic; an infundibular chamber is visible and marked post-stenotic dilatation of the main pulmonary artery is usually absent in the former type. Catheterization and selective angiocardiology are essential confirmatory procedures in doubtful cases.

The more common valve obstruction is suggested by both the systolic murmur and the character of the second heart sound in the pulmonary area. Radiologically post-stenotic dilatation of the pulmonary artery is invariable. The site of obstruction may be confirmed by cardiac catheterization or selective angiocardiology.

The most difficult problem is to decide preoperatively, when valvular stenosis exists, whether there is a significant associated infundibular obstruction. Clinically it is not possible to separate this group from the cases of isolated valvular stenosis. At cardiac catheterization it is seldom possible to do so. A rounded, symmetrical right ventricular pressure pulse characteristic of valvular stenosis is frequently present in combined stenosis preoperatively.

If the right ventricular pressure is lowered by surgical treatment and the symmetrical pressure pulse remains, valvular stenosis alone may be assumed. A slope on the pressure pulse preoperatively may mean infundibular obstruction but just as often does not, though this sign usually has significance postoperatively. An abrupt pressure change on entering the right ventricle from the pulmonary trunk preoperatively may be obtained in either valvular or combined stenosis. A normal right ventricular pressure pulse contour is never seen in either type of obstruction with high right ventricular pressures preoperatively, but after valvotomy may be encountered in both valvular or infundibular stenosis. In other words, cardiac catheterization is most helpful in pointing to valvular stenosis preoperatively and completely unhelpful in relation to any associated infundibular obstruction, whereas postoperatively it is often possible to assess the situation more accurately.

Selective angiocardiology using ciné-techniques may provide the answer to this preoperative problem. In Case 21, a preoperative ciné-angiogram demonstrated very convincingly the presence of a dome valve stenosis with jet, but examination of the outflow tract also indicated severe systolic constriction. Postoperative angiocardiology revealed a normal degree of outflow tract systolic contraction, but withdrawal pressures from the pulmonary artery to right ventricular indicated a definite though mild gradient at the infundibular level.

Immediate postoperative assessment of the cases of pulmonary valvular stenosis with normal aortic root after either operative approach has shown that certain clinical features allow prediction of an adequate fall in right ventricular pressure. These are a very soft residual systolic murmur, absence of thrill, audible aortic valve closure and normal or near normal splitting of the second heart sound in the pulmonary area. Usually there is, in addition, a marked reduction in the height of R in V<sub>1</sub> in the electrocardiogram or a change to right bundle branch block. In our cases, if R in V<sub>1</sub> is decreased in voltage, the right ventricular pressure has been significantly lowered. The converse is not always true, for, despite a good pressure drop, the R voltage in V<sub>1</sub> on occasion may remain high. By contrast an unchanged systolic murmur and thrill, inaudible aortic valve with faint or absent pulmonary valve closure, or an unchanged electrocardiogram indicated inadequate relief of the stenosis. Three of our 24 cases treated by direct operation had the latter clinical signs associated with unchanged right ventricular pressure after a previous Brock operation.

#### SUMMARY

Direct vision transarterial valvotomy for severe pulmonary valvular stenosis with normal aortic root has been employed in 24 children with one operative death. In 21 of the 23 survivors full assessment in the postoperative period was performed. All were improved as judged by the immediate decrease in right ventricular pressure, the result being classified as good in nine cases, fair in eight and poor in four cases. Reasons are advanced indicating that some patients at present in the "poor" category have secondary infundibular stenosis and may enter the "good" category during the first or second postoperative year.

The best results obtain in patients operated upon before the sixth year of life.

A comparison of results obtained in a similar group of children treated by indirect valvotomy shows that in our hands the mortality is lower and the relief greater with the newer technique.

Correlation of the preoperative and postoperative clinical examination with the level of right ventricular pressure obtained at cardiac catheterization has allowed the use of clinical signs to assess the postoperative improvement of individual cases.

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# RÉSUMÉ

On a eu recours à la valvulotomie transartérielle sous vision directe pour sténose grave de la valvule pulmonaire chez 24 enfants, avec une mort opératoire. Chez 21 des 23 survivants on dressa un bilan hémodynamique complet dans la période post-opératoire. Tous accusèrent une amélioration comme le témoigne un abaissement de la pression intraventriculaire droite. Les résultats furent jugés bons dans 9 cas, passables dans 8 et médiocres dans 4. On a raison de croire que certains malades aux résultats passables présentent une sténose secondaire du cône artériel, et atteindront peut-être le niveau des bons résultats au cours de la première ou de la deuxième année après l'opération. Les meilleurs résultats sont obtenus chez les enfants opérés avant l'âge de six ans. Une comparaison dressée entre nos résultats et ceux qui suivent la valvulotomie indirecte indique que la nouvelle technique entre nos mains donne une moindre mortalité et une meilleure correction de l'anomalie. La corrélation entre les faits cliniques pré- et post-opératoires d'une part, et d'autre part les niveaux de pression ventriculaire droite fournis par le cathétérisme cardiaque, nous a permis de suivre l'évolution post-opératoire de nos malades d'après les signes cliniques.

## EXPERIENCE WITH OUTPATIENT ANTICOAGULANT THERAPY\*

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THE OCCURRENCE of thrombotic episodes is one of the major problems in clinical medicine. The problem is intensified when thrombosis recurs. There is insufficient knowledge at present to predict when a patient may suffer from thrombo-embolism although these complications are more common under certain conditions, e.g. in the postoperative state, in congestive heart failure and in mitral stenosis with atrial fibrillation. Most of these do not warrant any special therapy, but continued anticoagulant therapy must be considered when thrombotic lesions are recurrent. With this end in view a trial of anticoagulant therapy has been conducted for several years on patients with recurrent venous thrombosis. Recently the series has been extended to include patients with recurrent coronary thrombosis and patients with peripheral embolism complicating heart disease. Anticoagulant therapy has also been tried in patients who had had repeated attacks of carotid and cerebral artery insufficiency and who were likely to develop complete obstruction of these arteries by thrombosis.

### PERSONAL SERIES

Fifty-nine patients have received an anticoagulant drug while attending the Cardiovascular Unit of the Toronto General Hospital as outpatients. The duration of treatment ranged from three months to five years, with an average time of 11 months on anticoagulants. In Table I the patients are listed according to diagnosis.

TABLE I.—59 OUTPATIENTS ON ANTICOAGULANT THERAPY

	Number
Recurring venous thrombosis.....	14
Carotid and cerebral arterial stenosis.....	6
Repeated myocardial infarction.....	28
Rheumatic heart disease and embolism.....	5
Peripheral arterial disease.....	6
	59

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†Fellow in Medicine, supported by a National Health Grant.

dront peut-être le niveau des bons résultats au cours de la première ou de la deuxième année après l'opération. Les meilleurs résultats sont obtenus chez les enfants opérés avant l'âge de six ans. Une comparaison dressée entre nos résultats et ceux qui suivent la valvulotomie indirecte indique que la nouvelle technique entre nos mains donne une moindre mortalité et une meilleure correction de l'anomalie. La corrélation entre les faits cliniques pré- et post-opératoires d'une part, et d'autre part les niveaux de pression ventriculaire droite fournis par le cathétérisme cardiaque, nous a permis de suivre l'évolution post-opératoire de nos malades d'après les signes cliniques.

Fourteen patients had recurring episodes of venous thrombosis. There were 12 men and two women, all between the ages of 30 and 45. In the men the original attack did not follow an injury or operation and no other associated disease could be demonstrated. The two women had their first attack of venous thrombosis in the postpartum period. Six patients with carotid and cerebral artery stenosis had transient attacks, e.g. weakness and numbness of one side of the body, disturbances of vision, facial weakness, or difficulty in swallowing. The recovery from the attacks before anticoagulant therapy was started was either complete or nearly complete. If cerebral softening was suspected the drug was withheld. Twenty-eight patients had two or more episodes of myocardial infarction within the space of two years. These patients were under the age of 60 years and it appeared that their outlook was poor. Five patients had embolism complicating chronic rheumatic heart disease, and six patients had occlusive arterial disease of the lower extremities; other methods of therapy including vasodilator drugs had been tried before dicoumarol administration was begun.<sup>1</sup>

Dicoumarol, the drug employed, reduces the prothrombin level less rapidly than some of the newer agents, for example coumadin<sup>2</sup> and phenylindanedione.<sup>3</sup> The depression of prothrombin, however, is not as long and delayed as it is with cyclocoumarol.<sup>3</sup> Thus it provides a happy medium between too rapid an effect on the one hand and too slow an effect on the other. This is a desirable property for an anticoagulant which is to be used on outpatients, where prothrombin times can be determined less frequently than with patients treated in hospital. Most fluctuation in prothrombin times occurred during the first month. After this it was usually possible to regulate the dose by determining prothrombin times once every two weeks. An attempt was made to keep the prothrombin time between 20 and 28 seconds (normal one-stage prothrombin time 14-15 seconds). The usual dose of dicoumarol necessary for this was 50 mg. a day. This was increased or decreased slightly according to the prothrombin time. For example, if the prothrombin time was less than 20 seconds, the dose could be increased by giving 75 mg. every second or third day. If the prothrombin time was higher than 28 seconds, the dose could be

reduced by giving 25 mg. every second day. The patients showed a marked individual difference in their response to dicoumarol, and this response varied in the same patient from time to time. Some patients responded unevenly to dicoumarol while others showed little alteration in prothrombin time and no adjustment of dose was necessary over the months. Two months after the first dose of dicoumarol, 34 of the 59 patients had prothrombin times between 20 and 28 seconds. Five patients in the series failed to co-operate satisfactorily. Either they neglected to take the dicoumarol as instructed or they were careless in returning for prothrombin time determinations.

TABLE II.—HÆMORRHAGIC COMPLICATIONS OF OUTPATIENT THERAPY WITH DICOUMAROL

Number of patients.....	14
Number of episodes.....	18
Patients having two episodes.....	4
Site of bleeding:	
Skin.....	9
Urinary tract.....	7
Stomach.....	2
Deaths.....	0

Eighteen episodes of bleeding occurred, with four patients bleeding twice. No deaths resulted from bleeding. Nine patients had ecchymoses, seven had gross bleeding from the urinary tract and two bled from the stomach. In all cases except four the prothrombin time was over 30 seconds when bleeding occurred. Of these four, one patient had gross hæmaturia with a prothrombin time of 29 seconds. He had been pensioned for pyelitis during the last war. Another patient with hæmaturia was found to have staghorn calculi. His prothrombin time was 25 seconds at the time of bleeding. The third crushed his knee in a revolving door while his prothrombin time was 27 seconds and developed a large hæmatoma in the calf. In the fourth several large bruises appeared on the skin while the prothrombin time was 27 seconds. All the patients in the series were advised to carry 5-mg. tablets of vitamin K<sub>1</sub> when travelling. In the event of an accident or surgical procedures or tooth extractions they were told to take one tablet of K<sub>1</sub> and to advise the attending physician that they were receiving dicoumarol. On long journeys prothrombin times were determined at nearby hospitals and the results were sent to the Cardiovascular Unit of the Toronto General Hospital by telegram or air mail. Instructions as to further dosage were then sent on to the patient. Two cases might be briefly mentioned.

The first case was of a 48-year-old man who in 1948 had an attack of phlebitis involving the veins of both calves and lasting for three weeks. In 1952 there was a recurrence of the phlebitis complicated by a pulmonary infarct. In 1953 again the phlebitis recurred and again he had a pulmonary infarct. For most of this year he was confined to bed or managed to get along

with difficulty on crutches because of continuing activity of the phlebitis. At the end of 1953 he had a sudden onset of superior vena caval obstruction and at this point therapy with dicoumarol was begun. Since that time he has had no further episodes of phlebitis or pulmonary infarction.

The second case was of a 67-year-old woman who complained of a noise in the right ear with attacks of weakness and numbness in the left arm and leg. The pulsation of the right common carotid artery was decreased and a loud bruit was heard. A diagnosis of carotid artery stenosis was made. She has now been receiving dicoumarol for a year and a half. Her symptoms disappeared within two weeks of starting dicoumarol therapy and have not returned. The bruit is no longer heard and the carotid artery pulsation has returned to a normal state.

#### DISCUSSION

In outpatient anticoagulant therapy the aims of treatment are (1) to prevent further thrombosis and (2) to hasten the disappearance of an existing thrombus. When a thrombus forms in a blood vessel or the cavity of the heart, there are two opposing reactions. One is the fresh deposition of the platelets and blood clot on the existing thrombus and the other is the reverse of this—the dissolving of the thrombus. Whether the thrombus enlarges or diminishes depends on which process outstrips the other. The battle may wax and wane for days, weeks or even years. An anticoagulant drug may maintain an improved circulation by preventing further thrombosis and by helping to remove existing thrombi. At the same time it is likely that collateral circulation will be encouraged. If the thrombus is not completely dissolved, activity of the thrombotic process may cease when the thrombus is replaced by fibrous tissue.

In the present series the administration of dicoumarol allowed fairly satisfactory control of the prothrombin level although there were 18 episodes of bleeding, most of them mild. No critical assessment of the effectiveness of treatment was possible because of the small number of patients. Nevertheless the natural course of recurring venous thrombosis, an uncommon condition, seemed to be altered beneficially. In cases remaining on treatment no recurrences were noted. The first case mentioned shows the usual favourable course during treatment. One patient after a year and a half on dicoumarol stopped treatment and six months later was admitted to another hospital with mesenteric vein thrombosis. After an extensive resection of bowel he was given dicoumarol again and in the intervening two years no further thrombotic episodes have occurred. The few patients with carotid and cerebral artery stenosis have also done well, except for one patient with a basilar artery stenosis who, during an attack of influenza, developed gastric bleeding. The prothrombin time was found to be longer than five minutes. Vitamin K<sub>1</sub> and blood transfusions were given and dicoumarol was withheld. Ten days later, when the

prothrombin time was normal, he became unconscious and died. At autopsy, basilar artery thrombosis was found to have been the cause of death.

It is difficult to define what constitutes a desired level of prothrombin. It is generally believed that twice the normal value, i.e. 28 to 30 seconds, is necessary for a good therapeutic effect. This is close to the level at which bleeding may occur, a danger which must be considered. There is justification for the view that bleeding due to anticoagulants outweighs the therapeutic advantages of this type of treatment. Most bleeding occurred when the prothrombin time was longer than 30 seconds. Twenty-eight seconds seemed dangerously high for the upper limit of therapeutic range, and lately an attempt has been made to keep the prothrombin time between 20 and 25 seconds. It is hoped that the therapeutic value will not be reduced. When the prothrombin time was longer than 30 seconds, 5 mg. of vitamin K<sub>1</sub> was given by mouth. Dicoumarol was continued without interruption at a lower dose. That each of four patients should have two episodes of bleeding suggested that some patients are more prone to bleed than others at a given level of prothrombin. Dicoumarol affects clotting factors other than the plasma prothrombin.<sup>4</sup> With greater understanding of the action of anticoagulants, better laboratory control will be possible. Unfortunately there is no method of predicting the effectiveness of anticoagulants in an individual patient. A level of prothrombin which prevents thrombosis in one patient may not do so in another. Connell has reported safer and more effective control using a method of standardized clotting time.<sup>5</sup> This method has much to recommend it, but the time needed for each individual test is considerably longer than that for prothrombin time. With our limited technical assistance the method would not be practicable.

American investigators have reported<sup>6</sup> improved survival after myocardial infarction when anticoagulants were continued after the patient left hospital. This, if confirmed, may mean that all patients with angina and coronary thrombosis should receive treatment for the rest of their lives. To determine the value of continued anticoagulant therapy a controlled study is necessary.

#### SUMMARY

Fifty-nine outpatients with various types of thrombotic disease received dicoumarol for an average period of 11 months.

One-stage prothrombin times were measured every two to three weeks. To minimize the risk of bleeding it is suggested that the prothrombin time be kept within a range of 20 to 25 seconds, with a normal value of 14 to 15 seconds.

Bleeding was a serious problem, 18 episodes being encountered; the prothrombin time in most instances was longer than 30 seconds.

No conclusions could be drawn about effectiveness of treatment. There is an urgent need for carefully controlled studies.

The authors acknowledge gratefully the skilled technical assistance of Miss Helga Ritter.

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#### RÉSUMÉ

Les auteurs font part de leurs résultats dans le traitement au dispensaire de 59 malades ambulants présentant des perturbations de la crase sanguine. Ces malades reçurent de la dicoumarine comme anticoagulant pendant une période variant de trois mois à cinq ans (moyenne 11 mois). Quatorze d'entre eux présentaient des thromboses veineuses répétées; six souffraient d'insuffisance circulatoire carotidienne ou cérébrale; 28 avaient été sujets à au moins deux attaques d'infarctus du myocarde en moins de deux ans; cinq avaient eu des embolies périphériques à la suite de cardiopathie rhumatismale et six portaient des lésions artérielles périphériques. Une fois la dose réglée, le temps de prothrombine ne fut déterminé qu'aux deux semaines.

Des complications hémorragiques se manifestèrent 18 fois en tout, sans cependant entraîner aucune mortalité. D'après les auteurs de cet article, les anticoagulants agiraient en prévenant la formation d'autres caillots et en dissolvant ceux qui sont déjà formés. La circulation collatérale en serait aussi améliorée. Bien que la portée de la thérapie ne puisse être évaluée d'avance, le but à atteindre est de doubler, sans plus, le temps de prothrombine.

Les résultats présentés ici ne se prêtent pas à une analyse statistique rigoureuse à cause du nombre relativement restreint d'observations et du manque de témoins. L'impression que donnent certains cas isolés semble indiquer que dans les thromboses répétées les effets obtenus justifieraient les risques encourus.

#### CHANGING PATTERNS IN CHILDHOOD TUBERCULOSIS

The incidence of tuberculosis in children is rising in certain parts of Canada and the U.S.A., as reflected in the findings of various health departments. This rise is predominantly among children under four years of age and is an apparent increase, due to an increase in reporting.

The form of tuberculosis most frequently reported is the primary infection. Primary tuberculosis is being sought in children who are ill or are in contact with adults known to have tuberculosis, and survey tuberculin testing is bringing more such cases to light.

The type of patient being brought to the attention of health departments has altered considerably. In 1951 it was an ill child with fairly extensive roentgenographic involvement, found because of symptoms. In 1955 often an asymptomatic child with some roentgenographic involvement was found as a result of a search for him. When this diagnosis is made, the tendency is to treat the child with antimicrobial drugs, although he may be asymptomatic and have radiological signs only of lymphadenopathy and a gastric lavage negative for tubercle bacilli.

Despite the rise in incidence of primary infection, there has been a fall in incidence of meningitis, miliary dissemination and reinfection tuberculosis. Other complications during the course of the child's illness have also decreased and the mortality rate has fallen most sharply—R. M. Schneider and E. E. Drummond: *Am. Rev. Tuberc.*, 76: 579, 1957.

THE BELCHER GASTRECTOMY  
FOR PEPTIC ULCER  
(FINAL REPORT)

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A PRELIMINARY REPORT on the results of this operation, which was developed in the Colonel Belcher Hospital, Calgary, Alberta, was published in 1955, when the first 35 cases were reported upon. An interim report was read before the Washington State meeting of the American College of Surgeons in July 1956. This is the final report covering the first 100 cases which have been followed up for 2½ to 5½ years.

For the information of those who have not read the preliminary report,<sup>1</sup> this type of gastrectomy was developed after a review of 100 consecutive gastrectomies of the Hofmeister modification of the Billroth II (Table I), the results of which were astoundingly bad. The report pointed out that while many "happy statistics" have been reported through the years, indicating that only a small percentage (3 to 6%) of the Billroth II gastrectomy patients had difficulties with their gastrointestinal functions, these statistics were inaccurate because the great majority of the reports were compiled from the patient's own assessment of his condition obtained through a mailed questionnaire. It also showed that the patient was concerned primarily with the relief of pain and ability to eat, rather than with his general physical condition and ability to carry on as a normal individual. The statistics in Table I were arrived at from personal examination including radiographs, laboratory studies of blood and meticulous investigation of nutritional status, capacity for work and general well-being.

TABLE I.—FOLLOW-UP OF 100 CONSECUTIVE  
HOFMEISTER-POLYA GASTRECTOMIES

Ages.....	21 to 73 years
Symptoms.....	1½ to 27 years
Follow-up since operation.....	1 to 5 years, average 34 months
Weight loss 5 lb. plus.....	70%
Postgastrectomy syndrome.....	34%
dumping.....	25%
Rapid gastric emptying.....	54%
Recurrence.....	0

The preliminary report also drew attention to the postgastrectomy syndrome, including dumping, and the various theories of its etiology: (1) rapid gastric emptying time, (2) blood sugar fluctuations, (3) jejunal afferent loop dilatation, (4) mechanical drag on the unsupported gastric remnant. It showed that the most consistent single finding in patients with postgastrectomy syndrome and also in the underweight patients without overt

symptoms was a rapid gastric emptying time and rapid small bowel transit time, and discussed the physiological disturbance naturally following this occurrence (Table II).

TABLE II.—FOLLOW-UP X-RAY FINDINGS,  
100 HOFMEISTER-POLYA OPERATIONS

Rapid gastric emptying and bowel transit.....	54%
Rapid gastric emptying plus weight loss.....	34%
Rapid gastric emptying plus dumping.....	25%
All those with dumping had weight loss	
Rapid gastric emptying with no symptoms.....	6%

BELCHER OPERATION

A repetition of the reasons for this pattern of gastrectomy, and a few points regarding technique which were set out in detail in the preliminary report, would seem in order. It was primarily intended to overcome (a) rapid gastric emptying time, (b) afferent loop dilatation, and (c) lack of suspension of the stomach remnant to prevent so-called mechanical drag on the gastric remnant and œsophagus (Fig. 1).

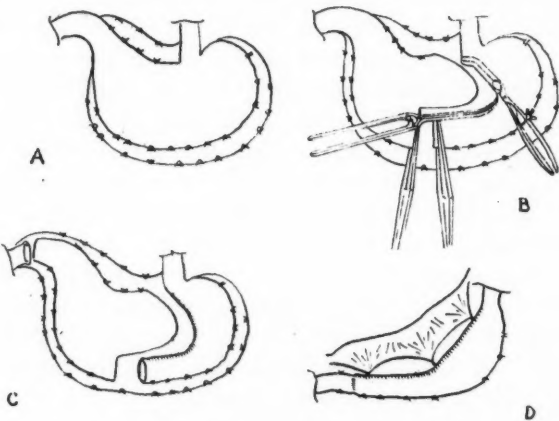


Fig. 1.—Diagram of pattern of Belcher Gastrectomy.

The distal 3 inches (7.5 cm.) of the newly formed stomach is tubed to approximately the same calibre as the duodenum (Fig. 1D). We use the figure 4 cm., which is marked on our clamps, as the width the stomal end of the stomach is to be cut. The line of section runs parallel to the greater curvature for 3 inches (Fig. 1B), and from this point curves towards the lesser curvature, practically all of which is removed. In order to allow the stomach remnant to swing over readily to the cut end of the duodenum, the greater curvature must be freed to the last short gastric artery (Fig. 1A). This branch with the œsophageal branch of the left gastric is the only remaining blood supply to the stomach, but in all cases it has been adequate. Although this is a consecutive series, in no instance has it been necessary to mobilize the duodenum, which is always sectioned distal to the ulcer. A more detailed description can be found in the preliminary report.

\*Chief of Staff, Surgery, Colonel Belcher Hospital, D.V.A., Calgary, Alta.

STATISTICS

The statistics for this final report are little different from those of the preliminary report. While we have to date performed over 200 Belcher gastrectomies with one postoperative death (Case 179), the statistics cover only the first 100 cases, which were followed up meticulously. The routine consisted of an examination at 6 months and 12 months after operation, and thereafter each 12 months up to the time of this report. Each examination included a physical examination, complete gastro-intestinal x-ray examination, weight by scale, Hb. determination, red cell count, and a careful inquiry into the patient's eating habits, well-being and fatigability. Altogether 378 such investigations were carried out on these 100 patients. The majority were completed in the Colonel Belcher Hospital, but many were kindly done by surgeons at other centres in Canada and the U.S.A. The final assessment of each case was carried out in our hospital by the Chief of Medicine, Dr. Morley J. Tuttle, and by the author (Table III). In cases where any possible doubt remained about the presence of disabilities after gastrectomy, the decision was "against the series".

TABLE III.—FOLLOW-UP OF 100 CONSECUTIVE BELCHER GASTRECTOMIES

Ages.....	18 to 80 years
Sex.....	
Female.....	3
Male.....	97
Location of ulcer:	
Gastric.....	17
Duodenal.....	80
Both.....	3
Duration of symptoms.....	2 to 40 years
Follow-up since operation.....	2½ to 5½ years
Underweight 5 lb. plus.....	4%
Dumping.....	3%
Rapid gastric emptying time.....	4%
Recurrence.....	2%

COMMENTS

While our studies indicate that rapid gastric emptying time is the *bête noire* which causes the usual postgastrectomy difficulties — dumping, weight loss, fatigue — this apparently does not apply in every case, as noted in Table IV.

TABLE IV.—RESULTS BELOW STANDARD—8%

Case No.	Dumping*	Weight loss	R.G.E.T.**	Fatigue
1	No	No	Yes	No
4	Yes	?	Yes	?
30	No	Yes	Yes	Yes
39	Mild	No	No	No
40	No	No	Yes	No
54	Mild	Yes	No	Mild
70	No	Yes	No	No
83	No	Yes	No	No

\*The syndrome of postprandial weakness, sweating, tremor, etc.

\*\*Rapid gastric emptying time.

CASE 1.—Constantly has rapid gastric emptying time (R.G.E.T.) radiologically but not the usual sequelæ.

CASE 4.—This man is a confirmed psychoneurotic and inclined to be alcoholic. He has had five follow-up examinations at other centres; these led to two operations, one of which was exploratory while the other converted the Belcher to a Billroth II. The last report concludes: "I believe we have converted a poor result from a Belcher-type gastrectomy into a poor result following a Billroth II, with primary enteroanastomosis."

CASE 30.—This 65-year-old man has gone four years since operation. His five follow-up examinations all indicate R.G.E.T. radiologically. He has weight loss and undue fatigue but no overt symptoms of dumping.

CASE 39.—This 36-year-old sergeant in the permanent army has had three postoperative studies, the last two at other centres. These two classify him as having a mild dumping syndrome. His weight is normal, gastric emptying time is normal, and he has no undue fatigue. I am inclined to think that this is not a case of dumping syndrome, but of postprandial discomfort at times as a result of failure to increase gastric capacity.

CASE 40.—This 55-year-old steamfitter, in five follow-up examinations over four years since operation, consistently shows R.G.E.T. radiologically. He has no other complaints, works hard, and has no fatigue. His hæmoglobin value on last check was 15.9 g. %.

CASE 54.—This 54-year-old electronics technician has not gained weight since he recovered from operation. He was first considered to have a mild dumping syndrome, but his last two examinations in 1956 and 1957 did not suggest this. His hæmoglobin value is 13.7 g. %. We have not been able to determine why he failed to gain weight, as he has no digestive difficulties.

CASE 70.—This 39-year-old man works as a furniture finisher. Works steadily and has no symptoms of dumping, yet has gained only 12 lb. since recovering from gastrectomy three years ago. He states that his previous normal weight was 20 lb. higher than it is at the moment. This statement is questionable but he still must be classed as having weight loss. The surgeon who last examined him in Vancouver in 1957 considered that the result was good.

CASE 83.—This 39-year-old bricklayer on last examination had lost 4 lb. since recovering from gastrectomy two years previously. He has no complaints, and does heavy work. His hæmoglobin value at last examination was 15.9 g. %. There must be some other reason for his weight loss.

Compared with the previous series of Billroth II gastrectomies, this group seems to be exceptionally well nourished, if weight, energy and hæmoglobin value are relevant criteria. Their Hb. value ranges from 12.5 to 18.3 g. %, with an average of 15.4 g. %, with one exception, a small woman who was last examined during her second pregnancy since operation and shows a Hb. value of 11.6 g. %.

The medical department of the Colonel Belcher Hospital is most enthusiastic about the results of

this operation, to the point of being inclined to relax its standards of indication for surgery.

The senior pension medical examiner, Dr. C. A. Findlay, reports as follows:

"We have been examining disability pensioners since January 1945. It has been our custom to review those who undergo gastrectomy periodically, until after their condition has been stable for approximately two years. It is our conviction that those who have had the Belcher type of gastrectomy are in general more relaxed and have a greater feeling of well-being than those who have had the older types of operation. We find their complaints are less, and they are able to re-establish themselves in social and economic life with much greater facility than previously."

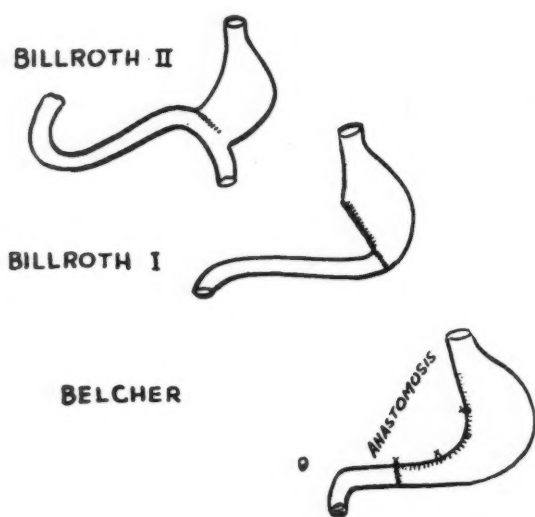


Fig. 2.—Comparison of three types of gastric remnant.

#### DISCUSSION

Since we first used the Belcher gastrectomy in March 1952, all cases that require surgical intervention for peptic ulcer have had this type of resection. I performed the first 100 operations but since that time all our surgical staff have adopted this pattern, both in the Colonel Belcher Hospital and in their private practices, and it has been adopted by many of the younger surgeons, particularly in Western Canada, with gratifying results. The only recurrences of which we are aware are the two reported in the first 100 (Cases 12 and 18). Both of these patients were definitely psychoneurotic and under ordinary circumstances other types of operation such as vagotomy would have been our preference. In order to preserve the integrity of our series, these and other similar unsatisfactory ulcer problem cases were subjected to the Belcher procedure. Both recurrences subsequently responded to transthoracic vagotomy. The ulcers healed and have remained so for 2½ and 2 years respectively.

To cure peptic ulcer by surgery is not the problem today. Long experience has demonstrated that a 75% resection of the stomach, which includes all the antrum, gives a most satisfactory percentage

of permanent cures. The problem today is to cure the ulcer and also restore the patient to health and vigour as indicated by normal weight, energy, and absence of fatigue. It is my considered opinion, shared by those who have had experience with the Belcher resection, that this operation more nearly approaches the ideal than does the Billroth II and its various modifications, the conventional Billroth I, or vagotomy.

The reasons for the much improved results are of course conjectural. Our current thinking is that they are due, in part, to the establishment of a more nearly normal continuity in the digestive tract so that certain essential absorptive functions (such as iron absorption) of the duodenum are better preserved. Equally important may be the fact that with resection of the lesser curvature, and the tubular form of the distal part of the gastric remnant, gastric emptying is consistently slower than in the other types of gastrectomy. Indeed, those unfamiliar with this operation may be worried about the slowness in emptying which is a feature of the early postoperative period. This relatively slow emptying also accounts for our observation that these cases require a somewhat longer period before they regain full gastric capacity.

#### SUMMARY

Results of meticulous follow-up of 100 consecutive Belcher gastrectomies are presented.

Our previous experience with the Hofmeister-Polya gastrectomy is reviewed.

The pattern of technique of the Belcher gastrectomy is outlined.

Results are compared with those of the Hofmeister-Polya gastrectomy, and reasons for our favourable experiences with the Belcher gastrectomy are advanced.

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#### RÉSUMÉ

Une nouvelle technique de gastrectomie surnommée opération de Belcher fut décrite dans ces pages il y a trois ans. Son auteur a revu les 100 premiers malades chez qui on l'avait pratiquée six et douze mois après l'opération. Chaque patient fut soumis à un examen clinique approfondi, complété par un repas baryté, des épreuves de laboratoire ainsi qu'une enquête minutieuse sur l'état de nutrition, la capacité de travail et l'état de santé en général.

Le syndrome des gastrectomisés serait surtout le résultat d'une évacuation gastrique en trombe et d'un transit rapide à travers l'intestin grêle et le colon. La technique Belcher vise justement à rétablir un rythme d'évacuation se rapprochant de la normale. Le lecteur est renvoyé à l'article antérieur pour la description du procédé. Des 100 cas revus dans cet article, huit n'atteignirent pas le niveau d'excellence des autres. L'auteur commente chacun d'entre eux.

La résection large de l'estomac (75% y compris l'antrum) donne un pourcentage satisfaisant de guérisons définitives dans les cas d'ulcères peptiques; cependant la santé du malade dépend en plus des mesures que l'on a prises pour créer des conditions qui rappellent le plus possible celles qui président à la fonction normale de digestion et d'absorption. Ce procédé technique déjà adopté dans plusieurs centres chirurgicaux du Canada et des États-Unis serait plein d'avenir.

RESPIRATORY INFECTIONS AT THE  
MONTREAL GENERAL HOSPITAL,  
JULY 1, 1955 – JUNE 30, 1956

LESTER McCALLUM, M.D., *Montreal*

ILLNESS subsequent to infection of the respiratory tract continues to afflict mankind, and cases of respiratory tract infection constitute a considerable percentage of admissions to hospital medical wards. Etiological diagnosis in many of these conditions is difficult to determine,<sup>1</sup> particularly in non-bacterial infections.

With the aid of a grant from the Cooper Fund of McGill University, a study was set up of all respiratory infections admitted to the public medical wards of the Montreal General Hospital over the 12-month period July 1, 1955 to June 30, 1956. The purpose was to determine, as far as possible, how many of the cases in this period were bacterial or non-bacterial in origin, how many could not be diagnosed etiologically by the methods used, how many were of mixed causation, and whether an analysis of clinical and laboratory data would help to indicate a bacterial or non-bacterial agent as causative in the individual case.

The cases were not selected, and there was no interference with their usual investigation and treatment, except that a blood specimen was drawn for virus study soon after admission and again 10-14 days later, whenever possible.

During this time there were 231 admissions (133 men) for 225 patients (127 men). Seventeen deaths (14 men) gave a mortality rate of 7.4% for the group.

Admissions by month are recorded in Table I. May 1956 had the greatest number of admissions, and July 1955 the fewest.

TABLE I.—ADMISSIONS BY MONTH

	Total No.		% total
	men	women	
July 1955.....	5 ( 5-0 )		2.1
August.....	12 ( 7-5 )		5.2
September.....	17 ( 8-9 )		7.4
October.....	22 (16-6 )		9.5
November.....	18 (12-6 )		8.0
December.....	19 (11-8 )		8.2
January 1956.....	26 (13-13)		11.2
February.....	18 ( 9-9 )		8.0
March.....	23 (12-11)		9.8
April.....	24 (11-13)		10.4
May.....	32 (17-15)		13.8
June.....	15 (12-3 )		6.4

This pattern differs from that of a previous study of pneumonias at the Montreal General Hospital, 1941-1943; at that time there was a greater difference between the summer and winter months in admissions for respiratory infection.<sup>2</sup>

The sixth and seventh decades led in number of admissions (Table II), but the spread was rather even from the third to the eighth decade. The average age for men was 53.2 years and for women 52.3 years.

TABLE II.—ADMISSION BY AGE GROUP

Age	No. of cases		% total
	men	women	
20.....	12 ( 5-7 )		5.2
21 - 30.....	31 (16-15)		13.3
31 - 40.....	27 (16-11)		12.0
41 - 50.....	32 (20-12)		13.6
51 - 60.....	40 (27-13)		17.4
61 - 70.....	40 (22-18)		17.4
71 - 80.....	32 (18-14)		13.6
80+.....	17 ( 9-8 )		7.5

The average hospital stay was 18.4 days, fever persisting for an average of 5.3 days after admission.

The outstanding symptoms are listed in Table III, and the leading physical signs in Table IV. The radiological findings are summarized in Table V.

TABLE III.—SYMPTOMS

Symptoms	Total No.		% total
	men	women	
Cough.....	188 (113-75)		81.4
Chest pain.....	169 ( 92-77)		73.2
Sputum.....	138 ( 83-53)		60.0
Dyspnoea.....	95 ( 57-38)		41.1
Fever.....	90 ( 50-40)		39.0
Chills.....	77 ( 44-33)		33.3
Malaise.....	71 ( 42-29)		30.7
Nausea.....	62 ( 38-24)		26.8
Hæmoptysis.....	41 ( 25-16)		17.3
Headache.....	34 ( 22-12)		14.7
Vomiting.....	32 ( 16-16)		13.9

TABLE IV.—PHYSICAL SIGNS

Sign	Total No.		% total
	men	women	
Rales.....	169		73.2
Alteration in percussion note.....	154		66.6
Diminished expansion.....	108		46.7
Alteration in breath sounds.....	104		45.0
Tachypnoea.....	98		42.4
Rhonchi.....	90		39.0
Cyanosis.....	37		16.0
Pleural friction.....	31		13.4
Fluid.....	16		6.8
Sibilant rales.....	13		5.7

TABLE V.—RADIOLOGICAL FINDINGS

Radiological Findings	Total No.		% total
	men	women	
Right lower lobe.....	84		36.4
Left lower lobe.....	67		29.0
Right middle lobe.....	35		15.1
Right upper lobe.....	28		11.6
Left upper lobe.....	25		10.8
Increased markings.....	36		15.6
Fluid.....	29		12.8
Emphysema.....	7		3.0
Pleural friction.....	4		1.7
Negative.....	33		14.3

*Hæmatological data.*—Table VI demonstrates the spread of white cell counts, the earliest one taken after admission being used in the compilation of these data. The levels may be roughly classified as low, normal, elevated and high; 52% were less than 9000 and 44% over 9000.

Sedimentation rates were normal in 19 cases (8.3%) and elevated in 121 (52.4%). The test was not recorded in 91 cases or 39.3%. Actually, if the

TABLE VI.—WHITE CELL COUNT

W.B.C./c.mm.	No.	% total
Less than 5000	18	7.8
5000 - 9000	103	44.6
9000 - 13,000	37	16.0
13,000+	65	28.1
Not recorded	8	3.5

number of sedimentation rates determined is considered, 86.4% were accelerated.

**Bacteriological data: Throat.**—Of 12 throat cultures performed, only two grew organisms of importance, both being staphylococci. These were interpreted as primary if the throat culture was performed within 24 hours of admission; otherwise they were considered as secondary invaders, probably encountered after admission.

**Sputum.**—Table VII shows the number of patients from whom various bacteria were cultured. Note that 41.5% grew normal flora, and that no organism was found with any great frequency.

TABLE VII.—SPUTUM CULTURES

Organisms cultured	Total No.	% total
<i>D. pneumoniae</i>	36	15.7
Staphylococci	17	7.4
Staphylococci (secondary)	23	10.1
Streptococci	12	5.2
<i>H. influenzae</i>	38	16.6
<i>E. coli</i>	9	4.0
<i>A. aerogenes</i>	7	3.0
<i>P. mirabilis</i>	6	2.6
<i>M. tuberculosis</i>	5	2.1
Friedländer's bacillus	0	0
Normal flora	96	41.5

**Blood.**—Only 6 (16.6%) of 96 blood cultures performed were positive.

**Pleural fluid.**—Twenty-one (84%) of 25 cultures were sterile, two grew staphylococci, and streptococci and *M. tuberculosis* were each isolated from one.

**Fatal cases.**—There were 17 fatal cases, 14 in men. The average age was 73 years (range 46 to 87 years) and the average number of days in hospital was 15. Fifteen patients had pre-existing disease — cardiovascular, pulmonary or malignant. Four deaths occurred within 58 hours of admission. Onset was gradual in 11 and sudden in six. Single lobes were involved in six, multiple lobes in 11. The white cell count was normal in six and elevated in nine. Blood cultures were positive in one and negative in 12. The causative organism was *D. pneumoniae* in four, staphylococcus in three, and undetermined in 10.

TABLE VIII.—VIRUS ANTIBODIES

Antibody	Present		Absent	
	No.	%	No.	%
Influenza A	168	60.9	108	39.1
Influenza B	116	42.0	160	58.0
Cold agglutinins	19	7.4	238	93.6
Strep. MG agglutinins	157	60.2	104	39.8
Psittacosis	21	7.7	251	93.3
Q fever	0	0		100.0

**Virus studies.**—From 186 of the patients, 277 blood specimens were drawn; 182 were paired and 95 were single specimens. On these 277 sera 1605 antibody tests were performed and in 451 tests antibodies were demonstrated. Table VIII shows the number of tests performed for each antigen and the numbers with and without antibodies. It is noteworthy that no antibodies to Q fever were demonstrated in any of the 264 specimens tested for it. This is contrary to the findings of other workers in this area,<sup>3</sup> and remains unexplained.

TABLE IX.—NO. OF CASES WITH VIRUS ANTIBODIES

WBC count	No. of cases	Inf. A.	Inf. B.	Cold Agg.*	Strep. MG Agg.*	Psitt.
5000 or less	18	7	3	1	6	3
5000 to 9000	103	33	15	4	32	5
9000 or more	102	39	17	1	25	2

\*A rise in cold and/or streptococcus MG agglutinins is linked with so-called primary atypical pneumonia. (Editor's Note)

Table IX shows the lack of correlation between white cell counts and the occurrence of virus antibodies.

**Diagnosis of viral disease.**—A four-fold or greater rise in antibody level during convalescence was necessary for a definitive diagnosis of recent infection by the test virus. During convalescence a high antibody level (1:8 or greater) on a single specimen was taken as presumptive evidence of recent infection by the test virus. By these criteria, there were 61 definitive cases of influenza A infection, and 66 presumptive, 5 definitive and 29 presumptive of influenza B; 1 definitive and 3 presumptive of cold agglutinin positive pneumonia; 10 definitive and 29 presumptive of streptococcus MG positive pneumonia; and 9 presumptive cases and 1 definitive case of psittacosis.

**Diagnosis of bacterial disease.**—Among the 28 cases of pneumonia of bacterial origin, *D. pneumoniae* accounted for 11, *H. influenzae* for nine, staphylococcus for six and *M. tuberculosis* and streptococcus each for one.

**Diagnosis of combined bacterial and viral disease.**—The cases considered to be of combined etiology are shown in Table X. Evidence for a combined etiology was clinical (a history of gripe developing after some days into a more severe illness) and laboratory (isolation of bacteria in nearly pure culture from sputum or other body fluid before treatment along with serological evidence of recent viral infection in the same patient).

TABLE X.—VIRUS

Organism	Inf. A	Inf. B	Cold Agg.	Strep. MG Agg.	Psitt.
<b>Bacteria</b>					
<i>D. pneumoniae</i> . . . .	13	6	2	6	0
Staphylococcus . . . .	9	2	1	5	0
Streptococcus . . . . .	1	1	0	1	1
<i>M. tuberculosis</i> . . . .	1	0	0	0	0
<i>H. influenzae</i> . . . . .	5	3	0	6	0

The percentage distribution of etiology was as follows: bacterial 12.2%, viral 42.4% and combined 26.8%. The remaining 18.6% of cases was of undetermined etiology.

#### DISCUSSION

The data presented here are weighted in favour of the viruses, as special attention was given to their demonstration, while only the usual ward procedures were used for isolation of bacteria. It would therefore appear that the reported number of cases of bacterial pneumonia is lower than the actual number. The reasons for this are: (1) treatment of the patient with antibiotics prior to admission; (2) treatment of the patient with antibiotics before securing adequate specimens of sputum etc. after admission; (3) delay in sending specimens for bacteriological analysis to the laboratory; (4) inadequate number of specimens sent for bacteriological culture, e.g., blood, throat swab, pleural fluid, sputum. Had greater attention been paid to these factors, more cases of bacterial pneumonia would have been detected.

The number of cases of viral pneumonia includes those in which a presumptive diagnosis was made. Since a high antibody titre in a single specimen does not necessarily incriminate a virus as the etiological agent, this figure may be somewhat high.

Of all cases 26.8% were considered to be of combined etiology. Bacterial isolations and virus antibody demonstration occurred in the same patient. The history of onset, white cell count, and radiological findings were not helpful in ruling out one or the other as an etiological factor, and both had to be incriminated. Indeed, there were a few cases in which two viruses demonstrated a four-fold rise of antibody at the same time; both had to be accepted as etiological agents.

The white cell count could not safely be used as a differentiating factor, as many cases with a high count showed virus antibodies. In some cases with a low count, bacteria were readily isolated from body fluids.

It would therefore appear that analysis of the clinical, hæmatological and radiographic features of a case of pneumonia gives no reliable information regarding the etiological agent responsible for the pneumonia. This stresses the necessity for careful use of bacteriological and virological methods to reach an etiological diagnosis. Failure to demonstrate an etiological agent in about one-fifth of our cases suggests that these methods were in themselves inadequate or were inadequately applied.

#### CONCLUSIONS

Study of 231 cases of respiratory disease admitted to the public medical wards of the Montreal General Hospital between July 1, 1955 and June 30, 1956 demonstrated that:

Approximately 12% were bacterially induced, 42% were virally induced and 27% were of combined etiology. In 19% no etiology was determined.

Etiology could not be predicted from an analysis of clinical, radiographic or hæmatological data.

The viruses of influenza A predominated over the viruses of influenza B by a proportion of 2 to 1.

The viruses of influenza A and influenza B and that responsible for development of streptococcus MG agglutinins predominated.

The viruses responsible for the development of cold agglutinins were rarely demonstrated.

Psittacosis causes an appreciable number of pneumonias in this area.

No Q fever antibodies were found in 264 specimens tested for it.

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#### RÉSUMÉ

Les 231 admissions à l'Hôpital Général de Montréal pour maladies des voies respiratoires pendant 12 mois consécutifs de 1955 à 1956 ont démontré qu'environ 12% de ces infections étaient d'origine bactérienne, 42% d'origine virale, et 27% d'étiologie mixte. La cause précise des autres 19% ne put être déterminée. L'analyse des données cliniques, radiologiques et hématologiques montre qu'elles ne fournissent aucun indice étiologique. Le virus A de l'influenza fut en cause deux fois plus souvent que le B. Ces deux virus ainsi que celui qui détermine les agglutinines de streptocoque MG furent les organismes les plus fréquemment rencontrés dans cette série. Par contre, les virus aux agglutinines froides ne furent vus que rarement. Si la psittacose fut incriminée dans un nombre relativement important de pneumonies, par contre, on ne trouva aucun anticorps à la fièvre Q dans les 264 spécimens où on les a recherchés.

#### "The Delicate Art of being a Heart . . ."

There is a fine art  
In being a  
Heart—  
A fact which we all well know;  
But it takes lots of digging  
To interpret the rigging  
And restore its "status quo".

With its tachycardia, bradycardia, sinus arrhythmia too,  
More T voltage, less T voltage, slightly more prominent Q;  
Negative T waves, large QS waves, auricular fibrillation—  
Upright T's, extrasystoles, left axis deviation.

This delicate organ  
Has its own  
Jargon—  
A tangle of turn-about phrases;  
But its job as a pump  
Keeps it right on the "jump"  
And worthy of myriad praises.

With its damaged left ventricle, ischæmic right ventricle,  
digitalis effect,  
Insignificant changes, myocardial changes, auricular flutters  
unchecked—  
Sagging ST's, arterial disease, right axis deviation:  
Diphasic T's, bigeminis———small wonder it cries for  
vacation!!

JOAN WIGHT

## CURRENT MANAGEMENT OF OTOSCLEROTIC DEAFNESS\*

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### INTRODUCTION

*"Today, he can discover his errors of yesterday and tomorrow he may obtain light on what he thinks himself sure of today."*

Many of us might consider that we are living in one of the most progressive eras of our specialty, but let us approach any medical subject with humility for, as Maimonides said, "Knowledge is immense and the spirit of man can extend infinitely to enrich itself daily with new requirements." Many of the accepted facts of today may in time become the errors of yesterday. Especially is this true of the function of hearing, about which considerable controversy still exists.

The hopes of a great many deafened people have been raised by the development in recent years of three new operative procedures for certain types of middle ear deafness:

1. Fenestration or the creation of a new window as a substitute for the oval window held down (ankylosed) by a bony growth called otosclerosis in the stapes bone of the middle ear.

2. Stapes mobilization is another operation for otosclerosis involving surgery around the ankylosed stapes. It is unfortunate that a recent popular magazine article has promulgated the incorrect idea that stapes mobilization for otosclerosis is a "simple" operation. To be sure, stapes mobilization is less time-consuming for the surgeon than the fenestration operation, and also there is rarely troublesome postoperative care, but this does not make it simple. It may look simple to the uninitiated. It takes long practice and skill and perhaps some good luck for any surgeon to mobilize any ankylosed stapes successfully, especially now, when the techniques are new and comparatively untried. Research is going on which may reduce the amount of luck that is necessary in performing this operation.

3. Tympanoplasty or microscopically controlled removal of adhesions and dead bone for partial relief of deafness resulting from middle ear infections.

New operations cause waves of enthusiasm which stimulate surgeons all over the world to try to improve the techniques. At present, however, the stapes mobilization and tympanoplasty operations have a long way to go. Fenestration, their predecessor, had many failures at first, but now in about three out of four cases is successful in the hands

of the best surgeons. The statistics for stapes mobilization on the other hand are not nearly as good.

By and large it is a good rule not to have mobilization done except by surgeons who are thoroughly acquainted with the fenestration technique and able to proceed with a fenestration if need be. There are men who have already acquired most of the skills necessary to do these operations, but mature judgment is vitally important for proper selection of the operation for a particular patient.

In the long run, it must be remembered that all these operations are in the nature of reconditioning a machine with no guarantee that the situation will not recur in a few months or a few years.

Generally speaking, the methods of diagnosis of cases suitable for operation consist of tuning fork tests, pure tone audiometry with masked bone conduction, speech tests, and a recruitment test if indicated.

The cases are divided into three categories. "A" cases are those where bone conduction loss for the speech frequencies (500, 1000, and 2000 cycles per second (cps)) is 10 decibels (db) or less. "B" cases are those with a bone conduction loss of 20 db or less at 500 and 1000 and 30 db or less at 2000 cps. "C" cases are those with a greater loss than 20 db at 500, 1000 and 30 db or more at 2000 cps. In order to compare results and statistics, all selection should conform to this method until a better classification is found. It is most important that each otologist carry out bone conduction tests on normal patients in order to correct his levels for his daily tests.

The "A" cases are suitable for a fenestration or a stapes mobilization. The results can be predicted fairly accurately for fenestration surgery, but no one yet has a method of selection adaptable to predicting success in a stapes operation. In a patient with a 60 db loss the stapes may be mobilized with ease, yet in one with a 40 db loss it may be found fixed and impossible to mobilize. Usually, however, if the loss is 35 db or less, mobilization is rendered less difficult, and at 50 db or less it is found often difficult to mobilize without fracturing the crura. When the loss reaches 60 db or more, only 15% can be mobilized. Nor can the surgeon tell the patient how much gain he may expect; yet, with the advanced cases, even a 20 db gain is important, associated with the continued use of a hearing aid.

All patients suitable for a fenestration are suitable for a stapes mobilization, and it has been our custom to advise ideal patients to accept a stapes mobilization as a preliminary procedure. The exception to this rule is in the case with a very narrow ear canal or the patient who prefers a more reliable procedure, which the fenestration operation provides.

All unilateral cases are considered as cases suitable for stapes mobilization. If secondary nerve degeneration is present, the stapes operation is

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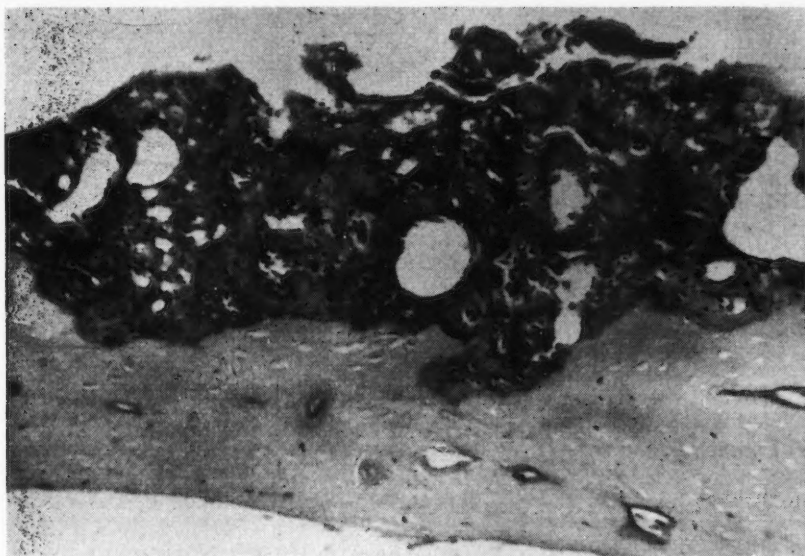


Fig. 1.—Photomicrograph of an area of otosclerotic bone shown here as dark staining bone. This particular focus was found in the fenestral lid. Usually otosclerosis is found in the oval window.

advised, provided there is an adequate bone air gap. In these latter cases, follow-up statistics will show whether this has been good advice or not. In order to be more certain, recruitment tests should be carried out on the unilateral cases and both types should have an occlusion differential<sup>1</sup> test to rule out round window block. An intelligibility test is required in the selection of ideal cases. Patients with economic difficulties and health problems who cannot afford time from their work or undergo a prolonged procedure should be advised to have a stapes mobilization.

Despite all these precautions the stapes is occasionally discovered to be mobile at the time of operation, and of course the hearing is not improved. In cases where the hearing loss is less than 25 db, it is felt that the risk entailed is too great for operation, though this opinion may be reversed with further experience.

Most important of all is the careful explanation to patients of their chances of better hearing after the preliminary mobilization. They must clearly understand that although it is a proven operation and very successful in a certain percentage of cases, if their operation fails they can be helped with a greater percentage of success by a fenestration operation.

In most patients there is a period of psychological despair following an unsuccessful stapes operation. The question is whether we are making a mistake in recommending routine stapes operations in all ideal cases. Time will answer this question.

#### PROCEDURE

The fenestration operation has remained a more or less consistent procedure since the time of the one-stage endaural (Lempert) approach. In our opinion, a microscope is indispensable for the creation of a clean meticulous fenestra (Fig. 1) associated with the use of minimal irrigation or none at all if possible.<sup>2</sup> This operation may be

carried out under local or general anaesthesia, and the patient usually hears immediately on return to his room. Hospitalization is necessary for almost 10 days, while antibiotic therapy and postoperative dressings are carried out. The level of air conduction hearing can reach the bone conduction level with the improved "dry" technique in nearly all ideal cases.

The stapes mobilization operation revived by Rosen in 1953,<sup>3</sup> improved upon with Lempert's original method of approach, has now become an established technique. Unfortunately, each surgeon is groping for a method of improving the results, and undue manipulation is resulting in failure rather than success in many cases.

We feel that manipulation is best carried out by a pulsating pressure on the long process of the incus; if this fails, pressure on the head of the stapes capitulum may result in mobilization. This operation is best carried out under a highpower dissecting microscope (Fig. 2). Lateral pressure on the neck either from side to side or from before backward may be tried if the surgeon is patient and gentle. We feel that pressure on the neck of the stapes and pulling in the direction of the stapedius tendon has a greater tendency to fracture the crura than pressure exerted in this fashion. The stapes footplate may spring loose suddenly, and this appears to give the best hearing result, or it may loosen slowly (and these are the cases which seem to obtain less gain in hearing or later re-ankylose).

Recently, Rosen<sup>4</sup> has been advocating manipulation of the footplate and states that, in 10 cases reported, a postoperative level of 20-30 db was obtained following a preoperative 50-60 db level. House states that over-manipulation may be more harmful than helpful, with the added risk of trauma to the vestibular contents possibly associated with bleeding into the perilymph, both of



Fig. 2.—The dissecting microscope ( $\times 16$ ) with camera attached. Picture is being taken by operator: used in stapes mobilization and the fenestration procedure.

which must be considered as productive of subsequent fibrosis. It is a wise surgeon who adopts the wait-and-see attitude at this phase in our continued development of this type of surgical intervention. Certainly, in our cases where a small opening was made into the vestibule, the hearing improvement disappeared with the replacement of the drum and a few patients developed more annoying tinnitus postoperatively.

#### COMPLICATIONS

In fenestration surgery, there are few if any complications in the hands of a competent surgeon. Excessive use of saline or trauma results in postoperative vertigo from serous labyrinthitis. This may persist from a few weeks to a few months. Perforations of the drum membrane, facial nerve damage and destruction of the horizontal semi-circular canal may all occur. A persisting discharge from the mastoid wound may require a subsequent mastoidectomy and skin graft, which fortunately does not affect the hearing in any way. The number of patients whose hearing becomes worse as a result of labyrinthitis amounts to 1%. The number of bony closures of the fistula following fenestration also amounts to 1%.

With the stapes mobilization procedure, the common complication is a tympanic perforation which heals readily. Middle ear infection or serous otitis media may follow, but vertigo is always absent unless footplate accidents occur. Tinnitus may become worse because of excessive trauma during the manipulation; facial paralysis has been a complication in a few cases reported in the literature and chorda tympani nerve section may prove annoying to some patients. In other words, complications are few and to this date in our series we have had none of the above-mentioned, except occasional serous otitis which quickly subsides. More important than the complications are the many unsuccessful mobilization procedures which may after several years tend to discredit the otologic surgeon in the eyes of the general practitioner and the public.

#### COMPARISON OF RESULTS

With the fenestration operation in ideal or "A" cases, using minimal irrigation as described elsewhere by us,<sup>2</sup> 78.9% reach a level of 20 db or better for the three speech frequencies. In this series of 100 ideal cases, all reached the 30 db level. The average preoperative level of 47.3 db was followed by an 18 db level for the speech frequencies. We attributed our results to minimal trauma to the delicate end-organ of balance by maintaining a dry field (Fig. 3).

With the stapes procedure our results are comparable to those of most clinics in North America; a few claim better results. In a series of 200 stapes operations 41.1% obtained a level of 30 db loss

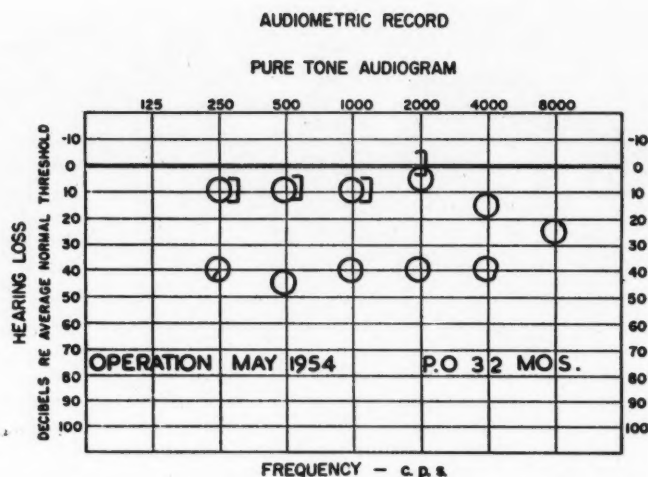


Fig. 3.—The upper line shows a postoperative level of 10 db after a fenestration operation. The lower line shows a level of 40 db before operation.

or better (Fig. 4); 17.8% obtained a slight improvement and 41.1% were no better (or slightly worse). To say that 59% obtained an improvement in hearing is of no statistical value; after all, it is the postoperative level of hearing that counts with the patient. The cases in which the stapes was mobilized for the second time following re-ankylosis showed a high percentage of success.

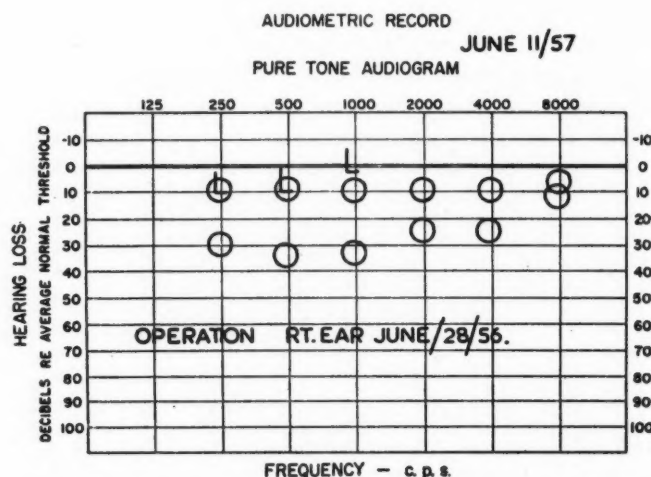


Fig. 4.—This shows a level of 10 db after a stapes mobilization operation from a preoperative level of 30-35 db.

Of the cases that subsequently underwent fenestration after an unsuccessful stapes operation, all obtained satisfactory hearing. Two cases, however, showed an increase in perceptive loss in the upper tones following fenestration. Whether this is due to placing an inflamed pedicle flap over the fenestra from the stapes incision area is not known. As Kos<sup>5</sup> has stated, it is not a question of the superiority of one operation over the other, but which case fits which procedure. As far as re-ankylosis is concerned, House feels that the first and fourth months are the dangerous ones, and that 2% of improved cases may lose their hearing gain in these periods. That finding coincides with our results.

#### DISCUSSION AND OBSERVATIONS

As far as fenestration permanency is concerned, if a level of hearing is maintained for one year in the absence of increasing perceptive loss, it may be considered more or less permanent. Some of our cases operated on 20 years ago have maintained a practical level of hearing.

The stapes procedure is not a simple one,<sup>7</sup> and to the surgeon it is more frustrating than any other otologic procedure. There are times when many of us are sorry we ever heard of this particular operation.

The use of an audiometer in a busy operating room is a necessary evil since there is no other method of obtaining an approximate figure of the preoperative and postoperative levels for speech frequencies. It is important to maintain the integrity of the middle ear bones, since interruption at any point prevents an improvement in hearing even though the footplate is mobilized. The hearing is seldom made worse since in most cases the loss is at 30 db level or more before operation, but occasionally a 5-10 db increase in the hearing loss after surgery may be attributed to this mishap. The degree of fixation usually determines the possibility of crural fracture, and if mobilization does not occur after repeated pulsations, further instrumentation to the region of the neck often results in fracture of the anterior crus. Lateral movement results in fracture most commonly at the posterior crus at its junction with the footplate. The anatomy of each stapes is slightly different, and of course one cannot judge by its appearance whether a stapes is strong or weak in structure. Occasionally, the crura appear thick and the mucous membrane is reddened, suggesting otosclerosis involving the crura; this type is fragile, manipulation often resulting in active bleeding. Visualization of the footplate is more than desirable but often not attainable, and this may be due to blood clot formation, scar tissue or inadequate exposure. Certainly, a view of the anterior crus and the anterior part of the footplate is not possible unless the incisions have been made from the very top to the bottom of the annulus (Fig. 5). The niche walls of the oval window may hide the footplate, and the chorda tympani nerve is nearly always in the way. One to three millimetres of the annulus can be removed, and this is often a great help in visualization. Only when movement of the footplate itself is seen is mobilization known to be complete. Movement of the stapedial tendon, incus or crura means very little unless the audiogram proves that mobilization must have occurred.

The excision of scar tissue around the footplate and crura is often attended by considerable bleeding, and the temporary hearing improvement is followed by a gradual loss as healing occurs. Belluci<sup>8</sup> quotes a figure of 28% of cases in which, after a successful mobilization, no improvement in hearing occurred. If a mobile stapes is en-



Fig. 5.—Middle ear contents exposed during stapes mobilization operation. Note: (1) long process of incus; (2) stapedial tendon; (3) posterior crus of stapes; (4) chorda tympani nerve, and (5) tympanic membrane folded out of the way.

countered, of course there will not be any improvement after closing the drum membrane; the question is whether these cases should then undergo fenestration. When the round window can be visualized, occasionally a bony overgrowth is seen to narrow the window. We have observed this in two of our cases; the round window appeared as a mere slit rather than a niche, and this explained the mobile stapes and the unsuccessful result.

As stated previously, a second stapes procedure can be done if re-ankylosis occurs, and a better result may follow the second operation. Almost 15% of cases reach the bone conduction level, but this figure cannot compare with that for fenestration in ideal cases. Some patients who reach this level no doubt obtain a hearing result that gives better postoperative reception for speech than an equally successful fenestration.

Few surgeons claim more than 25-30% good results after stapes mobilization, and this amounts to three out of four cases designated for failure as compared with slightly more than three out of four successful cases after fenestration. Part of this difference is that fenestration cases are selected and classified, whereas any case that possibly may be helped is now enjoying the questionable benefit of a stapes mobilization. The occasional "C" case with a wide gap between bone conduction and air conduction may use a hearing aid to better advantage, even though the actual gain may be small. Fowler<sup>9</sup> feels that the anterior crus should be cut, whereupon subsequent pressure will fracture the footplate at its mid-point, pointing out that most successful operations actually accomplish this series of events. Since, as stated, few anterior crura are visualized during this operation, it is difficult to substantiate or deprecate this manoeuvre. The possibility that joint changes are present in the middle ear bones has been demonstrated in histological sections by Wolff,<sup>10</sup> so despite a mobile footplate the impedance of these fixed or nearly

fixed joints remains as a possible reason why the hearing after mobilization does not reach the 0 db line.

In this discussion, one can only repeat the statement that direct footplate manipulation must be considered as a dangerous and hazardous procedure, especially for the novice and even for the skilled.

The greatest recommendation for the stapes procedure is the lack of inconvenience to the patient, during the operation and postoperatively.

The most important point emphasized in this paper is to impress the patient with the unpredictability of stapes mobilization results. If the patient accepts this fact before operation, he will not be deluded and pass through mental anguish. He must realize that the chances of failure are much greater than of success, and that it must be considered a preliminary procedure to the fenestration operation. It is surprising how many patients demand the gamble, when it is explained to them in this fashion. We do not yet know the permanency of these so-called successes.

#### CONCLUSION

We believe three factors should be emphasized in the stapes mobilization technique:

1. The use of the operating microscope is essential for the best constant result.
2. Direct visualization of the footplate is necessary.
3. The use of pressure directly inward towards the vestibule should be the principal attack in attempting mobilization.

In conclusion, the real goal is prevention; to attain this objective, we must increase our basic knowledge of hearing difficulty. Meanwhile, the new operations on the middle ear are reclaiming enough hearing to give real hope for the future.

*"There are many arts among men, the knowledge of which is acquired bit by bit by experience. For it is experience that causes our life to move forward by the skill we acquire, while want of experience subjects us to the effects of chance."*

We wish to express our gratitude to Mr. A. Smialowski, of the Photography Department, St. Michael's Hospital, for making the photographs in this article.

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#### RÉSUMÉ

Depuis quelques années trois nouvelles interventions ont été préconisées pour le contrôle de la surdité. La fenestration cherche à créer une nouvelle fenêtre ovale pour remplacer celle rendue inutile par des excroissances osseuses

dans l'étrier. La tympanoplastie est un nettoyage des adhérences et des particules d'os inertes déposées par les infections de l'oreille moyenne. La mobilisation de l'étrier tente de libérer cet osselet de l'ankylose où il se trouve. Ces deux dernières techniques ne sont pas entièrement satisfaisantes et demandent encore à être mises au point. Les meilleurs résultats dépendent d'une sélection judicieuse des sujets d'après l'acoumétrie et l'audiométrie. Cette opération très délicate est une forme de chirurgie réparatrice dont on ne peut garantir l'issue. Certaines indications techniques sont données dans le texte.

C'est dans la fenestration qu'on rencontre le moins de complication. La mobilisation de l'étrier amène parfois une perforation du tympan qui, heureusement, guérit sans ambage. Dans sa série personnelle, l'auteur rapporte que 78.9% des malades qui subirent la fenestration gagnèrent 20 décibels à l'audiométrie vocale. Dans 200 interventions sur l'étrier 41.1% des malades obtinrent un abaissement du seuil de leur perception de 30 décibels ou plus. Tous les échecs de l'intervention sur l'étrier qui passèrent ensuite à la fenestration y gagnèrent une ouïe satisfaisante. Il importe que le malade soit au courant des résultats imprévisibles de la mobilisation de l'étrier: on peut ainsi lui éviter beaucoup d'angoisse et de désillusions. Il faut que le patient sache que les risques d'échec sont plus nombreux que les chances de succès, car dans le cas où les premiers l'emporteraient sur les seconds, il peut toujours avoir recours à la fenestration.

#### ACHALASIA (MEGA-ŒSOPHAGUS) SIMULATING MEDIASTINAL NEOPLASM

By far the most alarming disguise which achalasia or mega-œsophagus or cardiospasm may assume is that of a mediastinal neoplasm. Mediastinal widening in a chest roentgenogram is always a source of concern to the physician. Such a finding immediately suggests numerous pathologic possibilities many of which have grim prognostic implications. The differential diagnosis, however, frequently omits consideration of achalasia as the cause of the abnormal roentgenographic shadow, since most discussions of mediastinal tumours neglect this entity. Appreciation of this diagnostic "pitfall," however, has been gradually increasing.

Recognition of atypical instances of cardiospasm is dependent upon three factors: awareness of the possibility, a careful history, and accurate roentgenographic interpretation. When there is an abnormal mediastinal shadow, cardiospasm must be considered. Second, history of dysphagia and regurgitation must be sought carefully, since many achalasia patients seem prone to neglect mention of such symptoms. Also a history of recurrent or chronic pulmonary infection should suggest the diagnosis of cardiospasm. Third, roentgenographic clues that define a "mediastinal mass" as a dilated œsophagus should be kept in mind. These clues include: diffuse widening of the mediastinum, which appears most marked on the right, since it is obscured by sternum and cardiac shadow on the left and an air fluid level at the superior border of the apparent mass. This pathognomonic sign can easily be overlooked. A tell-tale crescentic "air solid" shadow is often seen high in the thorax, representing air lying between the œsophageal wall and the solid material filling the remainder of the lumen. This air meniscus is an extremely valuable diagnostic sign, and its presence can lead to the diagnosis of achalasia in advance of barium studies. The widened mediastinal shadow is not uniformly dense, but is usually stippled or mottled because of the mixture of fluid, air and solid particles in the œsophagus. The gas bubble is usually absent from the stomach. The redundant œsophagus may cause apparent widening of the right heart shadow and obliteration of the cardiophrenic angle.

Three cases of achalasia are described in which the dilation of œsophagus suggested the presence of a mediastinal tumour roentgenographically and presented diagnostic difficulties. The clinical and roentgenographic features of achalasia are discussed. The occurrence of a crescentic air meniscus at the superior border of "abnormal mediastinal shadows" is stressed as a valuable diagnostic sign in achalasia. The importance of including barium swallow as part of the diagnostic evaluation of any mediastinal abnormality is also emphasized.—K. M. Moser and C. G. McCuiston; *Am. Rev. Tuberc.*, 76: 410, 1957.

# ABNORMALITY OF THE LONG BONES AND PROGRESSIVE MUSCULAR DYSTROPHY IN A FAMILY\*

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THE PROGRESSIVE muscular dystrophies are well recognized and documented (Gowers,<sup>1</sup> Batten,<sup>2</sup> Hurwitz,<sup>3</sup> and many others). However, it is probably not so generally appreciated that abnormalities of bone may occur in association with the muscular defect.

Affected males are those in whom a peculiar abnormality of the long bones was demonstrated radiologically, with or without delayed healing of fractures or muscular weakness and wasting.

## CASE REPORTS

(Cases are described in chronological order.)

CASE 1.—B.M. (died aged 65). History from nephew, G.M. Jr. Suffered from muscular weakness and wasting, finally losing the power of his arms and legs and being confined to a wheelchair and later to bed. No bone fractures were known to have occurred. He went blind in the latter part of his life.

CASE 2.—G.M. Sen. (67). Fractured his left femur in 1927 when he fell on an incline and struck his thigh against projecting brickwork. One year later the leg was amputated through the upper thigh, apparently because of non-union. Fracture of the right femur

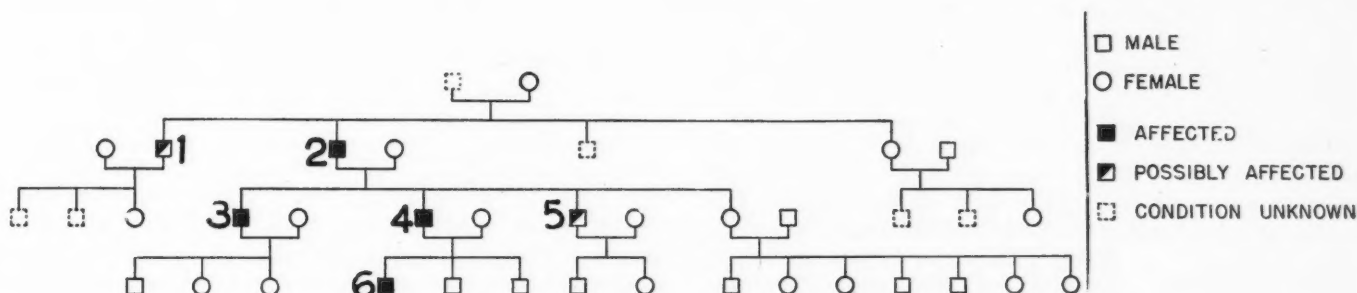


Fig. 1.—Family tree.

In the family presented, delayed healing of fractures of long bones was a notable and disabling feature, associated in one of the members studied with muscular dystrophy, of late onset and axio-appendicular distribution. The features of the bony abnormality are illustrated by radiographs of long bones of four members and bone biopsy from one member of the family.

## THE FAMILY

The family was of Scottish origin, and had emigrated to North America one generation before the first generation shown in the family tree (Fig. 1). Follow-up of its members was made difficult by a wide scatter over Canada and the United States, with loss of contact between different branches.

Cases are referred to by the numbers shown in Fig. 1.

Information was obtained by direct questioning and examination (Cases 3 and 4), from medical reports and radiographs obtained from hospitals where members had been treated (Cases 2 and 6), from the patient and his doctor (Case 5) and from another member of the family (Case 1).

occurred in 1939 because of a simple fall while on crutches, and was followed within a few months by amputation of the right leg through the upper thigh. At operation the findings were "non-union of fracture with the muscles degenerated to fat". After this operation the patient was confined to a wheelchair. In 1949 he sustained a fracture of the upper third of the right humerus when his wheelchair was struck by an automobile. The arm remained painful and the fracture failed to unite. His right arm is at present strapped to his side. His remaining limb (left arm) is weak and thin though he uses it to feed himself. He has had bilateral operative removal of cataracts.

In 1953, at the time of the latest radiographic examination, the serum calcium, phosphorus and alkaline phosphatase were estimated, and values were considered normal.

A history was obtained, by communication with the patient, of normal healing of a below-knee fracture of the left leg at the age of 18 years.

**Radiographs of bones (1953).**—There was gross generalized radiolucency of all bones studied (spine, ribs, scapulae and humerus, radius, ulna and carpal bones on both sides). The long bones (Fig. 2) showed irregularity of architecture in addition to rarefaction. Soft tissue shadows of the arms (not well reproduced in these photographs) suggested marked muscular wasting.

CASE 3.—G.M., Jr. (41). Examined on September 9, 1954. Weakness of the arm muscles, notably the biceps, was first noted in 1938 at the age of 25 years. Two years later his back muscles became weak, interfering with lifting of weights and causing him to walk

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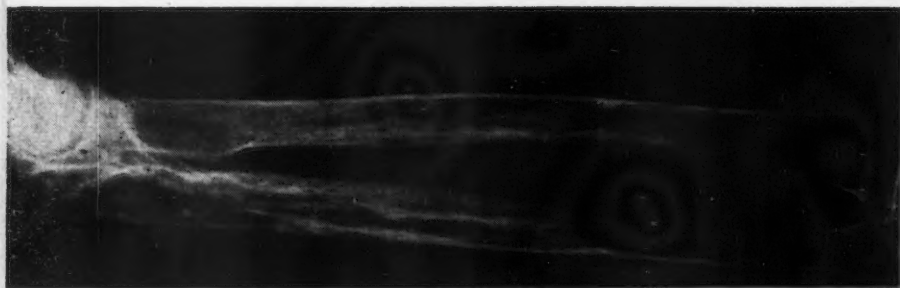


Fig. 2.—Case 2. Left forearm: marked rarefaction of radius and ulna with irregularity of bony architecture.

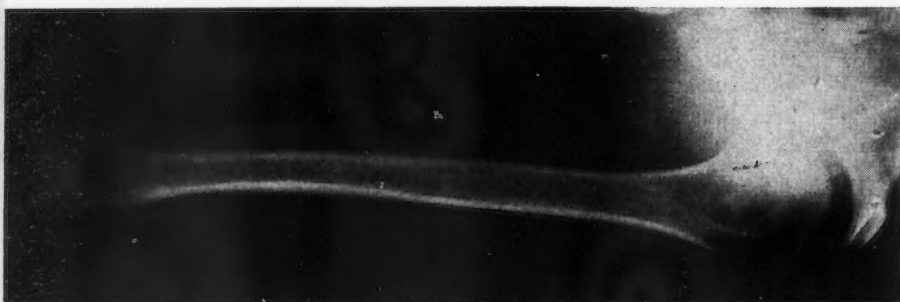


Fig. 3.—Left humerus from a man aged 37 years with severe muscular dystrophy of 20 years' duration, showing osteoporosis most marked at the bone ends and thinning of the cortex. For comparison with other radiographs reproduced in this paper.

"sway-backed". Five years later, at the age of 32, weakness of the legs became apparent and progressed over the next seven to eight years to the extent that walking became difficult and he was forced to ascend stairs on his hands and knees. One year before the date of examination, he fell while walking and sustained a fracture of the upper third of the left femur.

This failed to unite with conservative measures (immobilization in plaster), and 10 months later open reduction with plating and onlay bone grafting was carried out. At operation there was considerable fibrosis at the fracture site, but no evidence of callus formation. After operation, he got about to some extent using a walking caliper and crutches.

In 1950, at the age of 37 years, he had an episode of severe chest pain requiring hospitalization. No cause was found.

**Examination.**—There was marked wasting and weakness of muscles of the arms, shoulder girdle, back, buttocks and legs, those principally affected being the biceps, triceps, deltoid, sternal head of pectoralis major, latissimus dorsi, erector spinæ, glutei, quadriceps and extensor compartment muscles of the leg. Flexion of the supinated forearm and dorsiflexion of the foot could not be carried out on either side. Other movements were weak in proportion to the degree of muscle wasting. There was no involvement of sternomastoids, facial muscles or tongue. Speech and swallowing were normal.

The tendon reflexes were markedly diminished or absent; the abdominal reflexes were brisk and the plantar responses flexor. No abnormality of superficial or deep sensation was detected.

The pulse was 72, regular; blood pressure 120/70 mm. Hg. A harsh systolic murmur, not accompanied by a thrill,

was heard loudest in the second interspace and conducted to the neck vessels. A faint early diastolic murmur was heard down the left sternal margin.

Other systems were negative.

**Investigations.**—Urine—no albumin or reducing substances; occasional white blood cells; no organisms. Wassermann reaction negative. Serum calcium 9.5 mg. %. Serum phosphate (inorganic) 4.2 mg. %. Serum alkaline phosphatase 13 King-Armstrong units. Serum proteins—albumin 4.2 g. %, globulin 2.6 g. %. Radioiodine uptake normal (36% in 24 hours). 17-Ketosteroid output 17.7 mg./24 hours. Creatine tolerance—65% of the ingested dose was excreted in 24 hours (normal 20%). Calcium tolerance—after intravenous infusion of 15 mg. Ca/kg. body weight as calcium gluconate, 83% of the dose was excreted in the 12 hours commencing with the start of the infusion (normal 40-60%).<sup>4</sup>

Radiographs of chest showed slight increase in the transverse diameter of the heart. Electrocardiogram suggested left ventricular enlargement.

**Radiographs of bones.**—There was marked radiolucency of the ribs, clavicles, scapulæ, spine, pelvis and ends of the long bones. The shafts of both femora, especially the left (Fig. 4), both tibiæ (Fig. 5) and, to a lesser extent, the forearm bones, showed coarsened sclerotic trabeculation. There was no evidence of callus



Fig. 4.

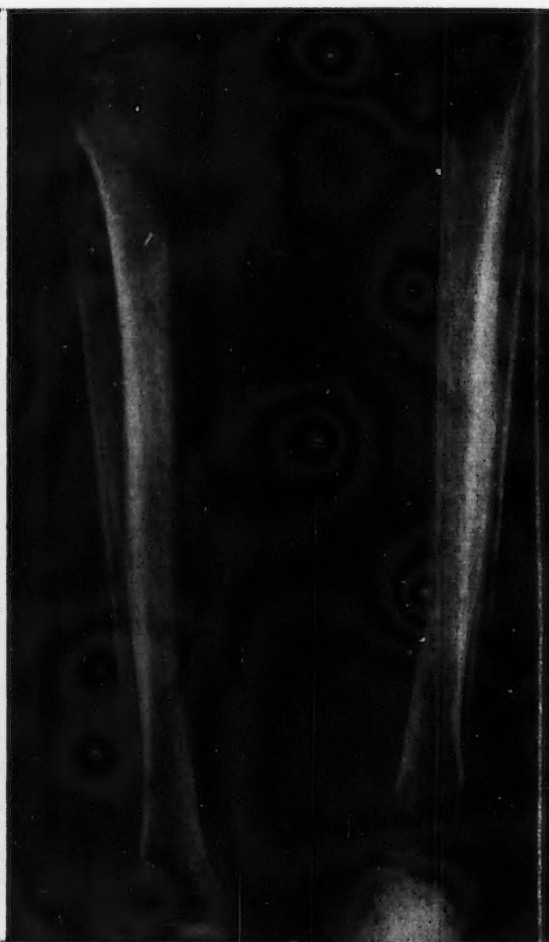


Fig. 5.

Fig. 4.—Case 3. Left femur (before operation): Fracture in the upper third of the shaft shows no callus formation (10 months). There is coarsened sclerotic trabeculation of the shaft, suggesting Paget's disease. Fig. 5.—Case 3. Tibiæ and fibulæ: There is marked rarefaction of the bone ends, loss of definition of the cortex in the shafts and irregularity of bony architecture, especially on the left side.

formation at the site of fracture in the upper third of the left femur. The bones of the cranial vault were thin, and speckled demineralization was present.

**Bone biopsy.**—Bone was taken from the subcutaneous surface of the upper third of the left tibia. Both compact and cancellous bone were examined histologically and comparison was made with bone taken from the same site from autopsied males in the same decade not known to have bone disease (Fig. 6).

There was marked widening of Haversian systems in compact bone compared with the normal. Many of these ran together to form broad irregular spaces on transverse section. There was no gross disorganization of lamellar structure. Bone cells were not notably diminished in number.

**CASE 4.—E.M. (40).** Examined March 17, 1954, at another hospital. In 1940, at the age of 26 years, while he was engaged in a judo bout and in the course of throwing his opponent over his left shoulder, his knees twisted to the right and he fell. Both knees became swollen and tender. After this episode, the knees were unstable and subject to recurrent locking and swelling, especially the right. Fluid was aspirated from the right knee on several occasions. In April 1952, a plaster cast was applied to the knee to enable him to continue with his work.

**Examination.**—He was short, thin and poorly developed. There was marked wasting of the lower parts of both quadriceps, greater on the right, with impaired power of extension of the knees. Bilateral genu recurvatum was present on standing and there was laxity of all the ligaments of both knee joints, especially the right. The muscles of the arms and shoulder girdle appeared adequate. Systematic examination was otherwise negative; pulse 80 regular. B.P. 110/70 mm. Hg.

**Investigations.**—Urine—specific gravity 1.015; no albumin; no reducing substances; no organized deposit. Kahn reaction negative. Erythrocyte sedimentation rate (Westergren) 12 mm. in 1 hr. Serum alkaline phosphatase 8.2 K.A. units.

**Radiographs of bones.**—Radiographs of the knees in February 1943 were reported as showing "an alteration in the bony structure of the lower ends of both femora and the upper ends of both tibiae consisting of a slight coarsening of the bony trabeculae and a slight increase in bone density". Radiographs in October 1947 showed "no alteration in bony structure" since 1943. In 1952-54, there was alteration in the bony structure of the lower ends of both femora and upper ends of both tibiae, consisting of areas of rarefaction with coarsened, sclerotic trabeculation (Fig. 7). The cortex of the shafts of both femora and both humeri was thickened and the medullary cavity reduced, the ratio cortex/medulla being 2.6:1 in the centre one-third of the femoral shaft (mean of 3 points on each shaft). Soft tissue calcification was present in the infrapatellar region and in the medial collateral ligament on the



Fig. 6a.



Fig. 6b.

**Fig. 6.**—Case 3. (a) Cortical bone from subcutaneous surface, upper third of left tibia, compared with (b) bone from the same site in an individual with no bone disease (same magnification). The Haversian canals are expanded and in many instances coalesce.

right and in the quadriceps tendon and infrapatellar region on the left. There was no radiological abnormality in other long bones, spine, pelvis or skull.

Intravenous pyelogram was normal.

**CASE 5.—V.M. (38).** (History from patient and patient's medical doctor.)

In August 1946, he sustained a compound fracture of the left radius and ulna in an automobile accident. The fractures were plated after nine weeks, but healing was apparently unsatisfactory and after four months a bone graft was inserted using bone from the left iliac crest. Some weeks later he was admitted to hospital for treatment of osteomyelitis at the fracture site. Later, two further bone grafts were inserted, using iliac crest bone from both sides, and within a few weeks of each operation he noted weakness of the donor leg. The left arm was amputated below the elbow in 1948.

Since this time he has noted increasing weakness of the legs, especially the left, so that he needs assistance to get up when he falls, and also weakness of the right arm and back.

His doctor attributed non-union to poor co-operation on the part of the patient, stating that the patient himself had removed the plaster cast from his arm. He found no radiologic abnormality of the forearm bones. He thought muscular weakness in the legs could be attributed to extensive removal of bone from the iliac crests. He had not seen the patient for three years.

**CASE 6.—J.M. (21).** (Medical report dated October 25, 1954.) Fracture of the mid shaft of the right femur occurred in December 1949 (at age 16). After one month of conservative treatment in plaster he was found to have slight anterior bowing of the femur with  $2\frac{1}{2}$  inches (6.3 cm.) shortening of the right leg. There was radiologic evidence of some callus formation. Traction was applied by means of a Kirschner wire, but when this was removed, shortening again occurred. After five months, open reduction was carried out. At operation, callus formation was found on the medial aspect of the fracture.



Fig. 7.

Fig. 7.—Case 4. The cortex of both femoral shafts is thickened (C:M ratio 2.6:1). Rarefaction with coarse trabeculation is present in the lower ends of the bones.



Fig. 8.

Fig. 8.—Case 6. Right femur one month after fracture. Callus formation is present on the medial side. The cortex is thickened and the diameter of the medullary cavity diminished (C:M ratio 2.8:1).

A bone plate and an onlay cortical graft were applied. The condition of the leg remained unsatisfactory and he was readmitted to hospital six times in the next two years for further treatment, including repeat bone grafting. Osteomyelitis occurred at the fracture site, about two years after fracture. In 1952 he was involved in a car accident, sustaining a supracondylar fracture of the right femur, extending into the knee joint, with hæmarthrosis. He had repeated sequestrectomies and incision of sinuses in the right thigh. He was not considered to show any abnormal weakness or wasting of muscles of arms, trunk or left leg.

**Radiographs of bones.**—Serial radiographs of the right femur were studied from the time of fracture until the present date. In January 1950 (one month after fracture), there was evidence of callus formation between the ends of the break on the medial side (Fig. 8).

The ratio of cortex to medulla was 2.8:1 (mean of 3 points in the centre one-third of the shaft). Subsequent radiographs showed appearances compatible with bone grafting and later of osteomyelitis with sequestrum formation.

The cortico-medullary ratio of the left femur (1953) was similar to that of the right.

## DISCUSSION

A characteristic bony abnormality has been noted in association with some cases of pseudohypertrophic muscular dystrophy in children. The most striking feature is reduction in diameter of the

shafts of long bones, especially the humerus; this thinning is obtained at the expense of the medullary cavity, the cortex remaining of about normal width. This condition was called by Friedreich "external concentric progressive bone atrophy". The early descriptions based on autopsy material are reviewed by Maybarduk and Levine,<sup>4</sup> who found opinion unanimous that the bony changes were not due to disuse atrophy secondary to muscle wasting and weakness, but to what Schultze has called "an hereditary predisposition to trophic changes in the muscular and osseous systems". It is stressed that the long bones in advanced muscular dystrophy may be normal.

Tixier and Roederer<sup>5</sup> in their account of an "osteomuscular dystrophy", presented four cases of progressive muscular dystrophy with osseous changes "resembling dwarfism and osteomalacia".

They described decalcification of the epiphyses and to a lesser extent of the diaphyses.

Radiologic bony abnormalities of non-specific type are mentioned in several reviews of progressive muscular dystrophy. Shank, Gilder and Hoagland<sup>6</sup> in a study of 40 patients mentioned delayed appearance of centres of ossification in the bones of the hands and the epiphyses of the long bones and demineralization of other bony structures. In many of the remaining cases radiographs showed generalized atrophy of the bone attributed to disuse. Hurwitz<sup>3</sup> in a presentation of 34 cases noted coarse trabeculation at the ends of the femur and in the bones of the pelvis in one case (Case 33) and a "moth-eaten" appearance of the neck of the left femur in one (Case 16). The ages were 13 and 11 years respectively. Wright<sup>7</sup> mentioned rarefaction of long bones in an investigation involving 19 cases.

A detailed radiologic study is that of Epstein and Abramson.<sup>8</sup> They examined seven patients with progressive muscular dystrophy aged 15-37 years and emphasized the characteristic slenderness of the shafts of long bones, especially of the humerus, together with relatively large humeral heads, small scapulæ and flaring of the pelvic bones. The bony changes were thought not to be related to the distribution of the muscular weakness. Pathologic fractures were not noted, but activity and exposure to trauma were presumably minimal, as most of

these patients were wheelchair invalids. They concluded that the changes described could not be explained on a basis of disuse alone, but might be "an expression of mesodermal defect resulting in muscular and skeletal defects".

Abnormal radiologic appearances in the skull were recorded by Janney, Goodhart and Isaacson<sup>9</sup> in two out of nine cases, especially a spotty rarefaction of bones of the cranial vault. In addition they found atrophic changes in long bones with streaky bone absorption of the upper end of the tibia.

Walton and Warrick<sup>10</sup> surveyed the radiologic bony changes in 61 cases of myopathy, including eight cases of the juvenile type of muscular dystrophy. In the Duchenne type of progressive muscular dystrophy they found marked abnormalities, including (a) progressive narrowing of the shafts of long bones due at first to reduction in diameter of the marrow cavity, the cortex being thinned later; shortening of bone length was sometimes apparent; (b) progressive rarefaction beginning in the ends of the long bones with disorganization of cancellous structure and loss of lines of force, leading eventually to generalized skeletal demineralization. They found similar bony changes in four old cases of poliomyelitis and two cases of dermatomyositis, and concluded that these changes were not peculiar to muscular dystrophy and could be satisfactorily explained on a basis of disuse, absence of stress and strain due to traction on muscle attachments, and abnormal postures due to weakness and contractures.

The bony abnormality in their cases of juvenile muscular dystrophy was regarded as slight, consisting of some narrowing of the shaft of the humerus in two cases. The quoted ages at onset were 10-18 years and at examination 30-37 years.

In the family here presented, bone disease was a very obvious feature. Six fractures of long bones followed by delayed union occurred in four males and resulted in the amputation of four limbs.

One of the male members (Case 3) had progressive muscular dystrophy of late onset (25 years), affecting the limbs and trunk. Wasting confined to the lower parts of both quadriceps was present in one (Case 4). In a third (Case 2) there was radiologic evidence of marked wasting of the upper limbs. In two others (Cases 1 and 5) there was stated to be muscular weakness and wasting. The muscular disorder in Case 3 was only slowly progressive, as would be expected from the late age of onset.

On radiologic examination, the most characteristic bony change in the two cases in which there was no generalized muscular weakness was a reduction in diameter of the medullary cavity in the shaft of long bones, especially the humerus and femur (Figs. 7 and 8). The cortex appeared to be relatively increased in width.

To confirm this observation, the ratio of cortex to medulla (C:M) was measured on x-ray films

of femurs of 20 persons examined for suspected fracture in the absence of known bone disease. The majority of these were outpatients. In 10 cases aged 18-39 years the mean C:M ratio in the middle one-third of the femoral shaft was 1.4:1, and in 10 cases aged 39-60 years the mean C:M ratio at this site was 1:1. The range for the whole series was 0.4:1 to 1.9:1. The figures for Cases 4 and 6 are considerably in excess of these (2.6:1 and 2.8:1).

The irregular osteoporosis of bone and the appearance of coarse trabeculation in the region of the knee joints in Case 4 is presumably related in some way to the localized muscular wasting in this region but does not correspond to local muscular insertion. Immobilization of a knee joint in plaster after injury may be followed by the development within a few weeks of multiple areas of rarefaction in the lower femur and upper tibia.<sup>11</sup> In this instance the right knee only was immobilized in plaster, while the bony changes are equally marked on both sides. Radiologic changes have been present in this case for at least 11 years and have remained essentially unchanged for the past two years, during which time the patient was normally ambulant and doing work which involved standing (machinist). It may be supposed that they are not determined by lack of weight-bearing stress.

In Case 3, generalized atrophy of bone, including the bones of the cranial vault, was present, associated with considerable reduction in activity. The irregular coarse trabeculation of the shafts of the long bones at first aroused suspicion of Paget's disease which was excluded by the finding of a normal serum alkaline phosphatase level and absence of the characteristic morphology on bone biopsy. Irregular expansion of Haversian systems with coalescence of adjoining canals, occurring in an already thickened cortex, is thought to have been responsible for the radiologic appearance.

The rarefaction of bone in this case is considered not to have been due to a deficiency of available calcium and phosphate, since the blood chemistry was normal and a larger than normal part of a standard intravenous infusion of calcium was rejected. (In osteomalacia less than 40% of the calcium load is excreted in the urine in 12 hours after the start of the infusion.<sup>12</sup>)

It is apparent that the condition described here is not exactly comparable to the bony changes described in the muscular dystrophies of early onset, which comprise the majority of the cases so far studied. In these the most regularly noted change has been slenderizing of the shafts of long bones, sometimes associated with shortening, presumably due to defective growth. It is, however, of interest that preservation of the thickness of the cortex at the expense of a narrowed medullary cavity (increase in the ratio cortex/medulla) has been noted by some authors.

It is to be emphasized that the bone abnormality is strikingly different from the minor degrees of bony change noted by Walton and Warrick in a few of their juvenile cases. The authors have studied radiographs of long bones from other cases of muscular dystrophy of many years' duration, and found only diffuse rarefaction of bone with thinning of the cortex, compatible with the concept of "disuse osteoporosis" (Fig. 3). The coarsened sclerotic trabeculations developing in a thickened cortex as described here were not seen. This "pagetoid" appearance of long bones on radiologic examination does not appear to have been described by previous authors.

The remarkable frequency of fracture of long bones with failure to unite, despite numerous orthopaedic manoeuvres by different surgeons, constitutes the family's main problem. This has not been a notable feature of previous reports. There is evidence that callus formation occurred in affected members during youth, but was apparently defective in the later stages of the disease. Delayed bone union after fracture has been attributed to loss of effective muscle pull in securing apposition of the bone ends, and reduced circulation to the limb associated with diminished muscle bulk and inactivity.<sup>13</sup> These factors were present in Case 3, though not to an extreme degree, and the prolonged delay in union, despite adequate immobilization and later plating and bone grafting, was thought to be unusual. The youngest individual to sustain a fracture (Case 6) did show evidence of attempted union, and the later development of osteomyelitis complicates assessment of factors leading to the unfavourable outcome. The amount of force required to produce fracture varied. The family must be regarded as relatively accident-prone, though this might well be due to inapparent muscular or skeletal defects.

The occurrence of the bony abnormality in males in at least two generations of the family indicates that it is a hereditary defect, dominant and possibly sex-limited in this instance. Despite the hereditary nature of the defect and frequency of bone fracture, the condition does not resemble osteogenesis imperfecta in its clinical course or clinical and radiologic features.

The history of blindness in one member and operations for cataracts in another is of interest, though it cannot necessarily be accepted as significant. However, this family does appear to offer some support to the hypothesis that muscular dystrophy may in some instances be a manifestation of a more general hereditary mesenchymal defect.

#### SUMMARY

A family is presented whose male members showed an abnormality of the long bones associated in at least one instance with late-developing progressive muscular dystrophy.

The earliest bony changes consisted in apparent thickening of the cortex and reduction in width of the

medullary cavity in long bones, especially the femur and humerus, with increase in the ratio of cortex to medulla above normal.

Rarefaction of these bones, pathologically resembling an irregular osteoporotic process, resulted in bizarre radiologic appearances with coarse trabeculation which in one instance suggested Paget's disease.

Fracture of long bones was of common occurrence and in the older individuals was regularly followed by delayed union.

Generalized osteoporosis of bone was a late finding, occurring in association with a considerable degree of muscle wasting and inactivity.

The bony abnormality appeared to be inherited as a sex-limited dominant characteristic. The possibility that it represented in this family part of a hereditary mesenchymal defect, in association with muscular dystrophy, cannot be excluded.

#### ADDENDUM

CASE 3.—G.M., Jr. Radiographs of left femur taken through 1955-1957 showed no change in the appearance of the fracture line until September 1956, three years after the original injury, when some obliteration was first noted. In February 1957 the fracture line could no longer be distinguished radiologically.

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#### RÉSUMÉ

Les auteurs de cet article rapportent le cas d'une famille dont les sujets mâles souffraient d'une anomalie des os longs accompagnée au moins dans un cas d'une dystrophie musculaire progressive d'origine tardive. Les premières manifestations osseuses consistèrent en un épaississement apparent de l'écorce et en une diminution de la cavité médullaire des os longs, particulièrement du fémur et de l'humérus, donnant une augmentation dans le rapport corticomédullaire au-dessus de la normale. La rarefaction de ces os simulant un processus ostéo-porotique irrégulier évoquait l'apparence radiologique des trabécules grossières que l'on voit dans la maladie de Paget. Ces os longs subirent de nombreuses fractures qui dans le plus âgé des deux sujets donnèrent régulièrement lieu à une union retardée. Une ostéoporose généralisée se manifesta finalement accompagnée d'une diminution de la masse musculaire et d'inactivité. Cette anomalie osseuse semble être un caractère héréditaire dominant lié au sexe. Il est possible que de concert avec la dystrophie musculaire cette anomalie osseuse représente un défaut héréditaire du mésenchyme.

## THE VENOUS PRESSURE AND VENOUS PULSE IN THE CLINICAL EXAMINATION OF THE HEART. I. THE VENOUS PRESSURE\*

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ALTHOUGH the history of the study of the venous blood pressure is as long as that of its arterial counterpart, far less attention has been paid to its role in normal and pathological circulatory states. Recent years have seen a great increase in our knowledge of hæmodynamics largely because of development of the technique of cardiac catheterization, and this has reawakened interest in the venous pulse and pressure and their clinical significance. The purpose of this and a subsequent paper is to review briefly the literature on this subject without presenting any new material, in order to focus attention on an aspect of the clinical investigation of cardiac function which has been largely submerged under newer and more complicated techniques, with a plea for its restoration to a logical place.

### SIGNIFICANCE OF VENOUS PRESSURE

Although the purpose of measuring venous pressure was at first only the satisfaction of scientific curiosity, it had early been recognized that heart failure was attended by a congestive venous plethora. Early in the last century, Corvisart<sup>1</sup> described the lividity of hue and engorgement of the general venous system consequent on constriction of the right orifices of the heart. Fifty years later, Sir James Hope<sup>2</sup> described how failure of the left side of the heart led to congestion of the lungs and embarrassment of the right ventricle, with, at first, dilation and hypertrophy of this organ, and later incomplete emptying and damming up of blood in the distended auricle and venous reservoirs.

Although Corvisart had remarked: "By reasoning physiologically, it may be advanced that a small quantity of blood conveyed . . . to the cavities of the left heart, and filling these cavities partially, will stimulate them imperfectly; that from this insufficient stimulus will arise feeble and slow contractions," it remained for Starling<sup>3</sup> to enunciate a quantitative relationship between diastolic stretch and ventricular output, and to equate the former to the venous filling pressure. Starling made the further crucial observation that, when ventricular output reaches its maximum, i.e. when venous pressure is at its optimum height, if venous pressure is further increased, cardiac output does not remain maximal but starts to diminish. The corollary of this law became quickly evident to the clinician, namely that in congestive failure, lowering the venous pressure increases ventricular output and restores cardiac compensation. Measurement of venous pressure became a valuable aid both in the detection

of congestive failure and in assessing the efficacy of treatment.

Although MacKenzie<sup>4</sup> had minimized the clinical significance of the venous pressure in evolving his theory of "forward heart failure", his pupil Lewis<sup>5</sup> drew attention to elevation of the venous pressure as the most important sign of congestive failure and demonstrated how this could be detected at the bedside by simple inspection of the neck veins.

The study of venous pressure, particularly its relation to the normal and failing heart, was continued in Britain after Lewis, especially by McMichael,<sup>6</sup> who showed that cardiac decompensation in man was generally in accordance with Starling's law, but that in certain types of congestive failure with high venous pressures the output was normal or high. For these hyperkinetic circulatory states he coined the phrase "high output failure". He showed the effects of lowering venous pressure in raising cardiac output in congestive failure, and pointed out the detrimental effects of reducing venous pressure in compensated high output states. McMichael continued the teaching of the British school of cardiology in emphasizing the importance of the clinical assessment of venous filling pressure, undertaken at the bedside by inspection of the cervical veins, as the cornerstone of examination of the cardiovascular system. This principle has recently been summarized by Wood:<sup>7</sup> ". . . the jugular venous pulse should be analysed clinically in terms of pressure and waveform. It is hard to conceive of any physical sign that is more informative."

The introduction of cardiac catheterization by Courand and Richards in the United States and by McMichael in Britain has permitted comparison of the central venous pressure, i.e. the mean right atrial pressure, with peripherally determined venous pressures. Richards<sup>8</sup> has summarized the early contributions of this technique to the physiology of congestive failure.

For the past five years, McMichael and Shillingford<sup>9</sup> and their associates in London have been studying the phenomenon of regurgitant flow through the tricuspid valve in congestive failure by the ingenious method of dye-dilution curves. They have postulated that in congestive failure, when the venous pressure approaches 20 cm. H<sub>2</sub>O, right ventricular dilatation renders the tricuspid valve functionally incompetent, resulting in the initiation of regurgitant back-flow. In severe low output failure, regurgitant flow may exceed forward flow and becomes clinically apparent, resulting in the deep systolic pulsations customarily seen in the cervical veins and felt in the liver. The sum of forward and regurgitant flow may therefore be normal or even high in congestive "low output" failure, and these authors suggest a reconsideration of the terms low and high output failure with, perhaps, a reconstruction of Starling's curve.

### TECHNIQUES OF VENOUS PRESSURE ESTIMATION

Stephen Hales (1677-1761),<sup>10</sup> an inventive Kentish parson with a physiological bent, is believed to be the first person to measure the venous blood pressure of a living organism. He tied a mare on her back and inserted a glass tube into the jugular vein. He wrote that the blood rose in the tube "about a foot" and "with an unequally accelerated motion, nine inches or more on small strainings of the mare".<sup>11, 12</sup> The first

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attempt in man was not made until 150 years later when, in 1902, Frey<sup>13</sup> reported a crude indirect method which involved determining the weight in grams necessary to collapse a distended peripheral vein, but the technique did not lend itself to calibration in terms of fluid pressure. The first practical apparatus for venous pressure estimation was devised by von Recklinghausen,<sup>14</sup> who in 1906 used a small rubber bag incorporating a glass viewing plate, which could be placed over the distended peripheral vein and the edges made adherent with glycerin. Air was pumped in with a hand bulb and the system connected with a saline manometer. The indirect method of von Recklinghausen was introduced into the United States in an improved version by Hooker and Eyster<sup>15</sup> at Johns Hopkins, and remained in vogue for some time, but was eventually superseded by the direct method.

The direct method of measuring pressure in the peripheral veins was introduced by Moritz and von Tabora<sup>16</sup> in 1910. This technique consists of inserting a needle connected to a saline manometer into an appropriate vein, usually the median basilic, the saline being allowed to enter the vein until the inflow ceases; with a flexible connection leading to a burette on an adjustable stand with a side arm, a reading can be taken from a suitable reference point or zero level with the patient in a variety of positions. Although attempts have been made to render this technique less cumbersome and to obviate the need for sterile equipment and venipuncture, it remains the standard technique in use today.

The third method of venous pressure determination is by clinical examination. Lewis was the originator of this method, although he gives due recognition to Gaertner. Gaertner<sup>17</sup> had shown, as early as 1904, that when the arm is warm and hangs loosely by the side, the veins on the back of the hand are distended; if the arm is lifted passively, these veins will collapse at a point above the level of the right atrium equal in height to the venous pressure. Lewis<sup>18</sup> made use of the jugular veins, because of their direct course to the heart, as a sort of built-in manometer. He postulated that the oscillating top of the swollen portion of the jugular vein indicated the point of atmospheric pressure within the veins, the vessel above this point being collapsed, since the pressure within it was less than atmospheric. He noted that the point of collapse in patients without heart disease, whether upright or recumbent, was at or about the level of the sternal angle, and he used this as a convenient reference point.

The Lewis method of venous pressure estimation is generally ignored at the present time, largely because venous pulsation in the veins of the neck is overlooked or disregarded as being inapparent in the majority of patients. Actually this is not so, as Allen<sup>19</sup> pointed out in the pages of this journal ten years ago. Borst and Molhuysen<sup>20</sup> showed that, of 400 patients selected at random from their outpatient clinics, the jugular venous pulse was visible and it was possible to make a clinical estimation of the venous pressure in 94%. In 90% of the same patients, estimates obtained by two independent observers fell within  $\pm 0.5$  cm. H<sub>2</sub>O. In estimating the venous pressure in this manner, it is essential to place the patient properly so that the muscles of the neck are relaxed and to adjust the angle of the head of the bed so that the upper level of venous pulsation is brought to a favourable point in the neck. Pulsation should be looked for in the internal jugular vein,

which is greatly to be preferred over the external jugular, for the latter takes a circuitous route to the heart and contains valves which hinder the transmission of atrial pulsation. Venous pulsations have a deep, welling character, are normally biphasic and rise higher in the neck with expiration or straining; the arterial pulsation of the carotids is sharper and monophasic and does not alter its position. Once the upper level of venous pulsation has been located, it is a simple matter to assess its vertical level above the sternal angle or some other reference point. Borst and Molhuysen<sup>20</sup> have described a simple right-angled measure for accurate assessment of the venous pressure in this manner (see Fig. 1). An alternative method of record-

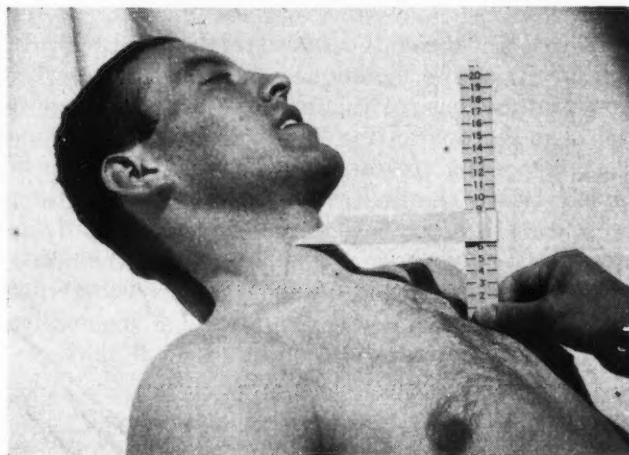


Fig. 1.—Indirect method of estimating the jugular venous pressure using the simple right-angle measure described by Borst. (28)

ing this clinical observation is to note the level of venous distension and the angle of inclination of the patient; i.e. jugular venous pressure (J.V.P.) 2 cm. above the clavicle at 45°. The practice of recording the presence or absence of venous distension in the neck veins without reference to the patient's position is not only uninformative but frankly misleading.

#### NORMAL VENOUS PRESSURE

The establishment of normal values for venous pressure was for a long time hampered, not so much by differences in methods as by variety of reference points. Ranges of values which have been obtained in normals with various techniques and reference points are summarized in Table I. All of these workers were attempting to define a zero point which would closely approximate the level of the right atrium in the majority of patients. This point was exhaustively reviewed by Lyons *et al.*<sup>21</sup> who, by actual dissection of cadavers, showed that the right atrium bore a more constant relationship to the back than to the mid-axillary line or to any landmark on the anterior aspect of the chest. These authors suggested a point 10 cm. from the back, with the patient recumbent, as the most accurate reference point, and this is now generally employed when saline manometry is used. The normal antecubital venous pressure, with this reference point, is generally stated to vary between +3 cm. and +10 cm. H<sub>2</sub>O at rest.<sup>22</sup>

TABLE I.—NORMAL VENOUS PRESSURES

Date	Author	Method	Reference point	Range (cm. H <sub>2</sub> O)
1906	von Recklinghausen <sup>14</sup>	Indirect (pneumatic collapse)	Midway between xyphoid and back	2-12
1908	Fyster and Hooker <sup>15</sup>	ditto	"Level of heart"	4-10
1910	Moritz and von Tabora <sup>16</sup>	Direct (saline manometer)	5 cm. dorsal to the 4th costochondral junction	4-8
1924	Bedford and Wright <sup>19</sup>	Direct (anaeroid manometer)	10 cm. below sternum at subcostal angle	5-15
1930	Taylor <i>et al.</i>	Direct (blood-filled manometer)	Midaxillary line	4-10
1937	Ferris and Wilkins <sup>51</sup>	Direct (saline manometer)	5 cm. dorsal to the 4th costochondral junction	4-10
1938	Lyons <i>et al.</i> <sup>21</sup>	ditto	10 cm. anterior to the skin of the back	5-15
1945	Hitzig <sup>47</sup>	Direct (blood-filled manometer)	5 cm. below sternum at 4th rib	4-8
1951	Ochsner <i>et al.</i> <sup>12</sup>	Direct (anaeroid manometer)	Mid-point of chest	8-12

Although it had been suspected earlier that peripheral venous pressure readings might not accurately reflect the central venous pressure, proof awaited the development of the cardiac catheter. In 1952 Pedersen<sup>23</sup> measured simultaneously the right atrial pressure by cardiac catheter and the antecubital venous pressure in the opposite arm by percutaneous venipuncture in 18 patients. He found that antecubital venous pressure was greater in all cases, ranging from +1 cm. to +5.8 cm. H<sub>2</sub>O higher, and that the discrepancy was greater at lower pressures. In comparing intra-atrial pressures with pressures in the subclavian vein measured during catheter withdrawal, he found a much higher degree of correlation, the widest variation being +1.5 cm. H<sub>2</sub>O. Ochsner *et al.*<sup>12</sup> substantiated the existence of a peripheral-central pressure gradient in a careful study of innumerable venous pressure determinations in the superficial veins of the body. These authors showed a progressive rise in venous pressure related to distance from the heart. In 39 patients, the mean pressure in the external jugular vein was +7 cm. H<sub>2</sub>O, while in the median basilic the mean pressure was +10 cm. H<sub>2</sub>O. Richards *et al.*<sup>24</sup> compared right atrial and arm vein pressures in nine patients and demonstrated an average increase of 4.1 cm. H<sub>2</sub>O in the peripheral veins; this peripheral-central gradient tended to disappear as venous pressure rose, and it was virtually absent at pressures above 15 cm. H<sub>2</sub>O. This gradient also accounts for the discrepancy in the usual values cited for normal antecubital venous pressure (+3 to +10 cm. H<sub>2</sub>O) and those for mean right atrial pressure (+2 to +5 cm. H<sub>2</sub>O (Friedberg<sup>22</sup>)).

Wood<sup>7</sup> has emphasized the superiority of the Lewis method of determining venous pressure; not only does the jugular venous pressure more closely reflect pressure within the right atrium, but it also provides a rapid and convenient method of *continuously* following the filling pressure of the right heart in a patient in whom this may be constantly fluctuating. Wood states that the normal jugular venous pressure ranges between -7 cm. and +3 cm. H<sub>2</sub>O with reference to the sternal angle; this correlates closely with his finding of an average mean right atrial pressure in 50 normals of -2 cm. H<sub>2</sub>O below the sternal angle. He defends Lewis's choice of the sternal angle as a reference

point because of its relatively constant vertical relationship to the right atrium in both the upright and recumbent positions, which is of special value in dealing with patients with orthopnea.

#### VENOUS HYPERTENSION IN CONDITIONS OTHER THAN HEART FAILURE

Although a significant elevation of jugular venous pressure is the *sine qua non* of right ventricular failure, it occurs under other circumstances. These can be broadly grouped under two headings: conditions which interfere mechanically with right ventricular filling, and hyperkinetic "high output" states.

Complete occlusion of the superior vena cava, as by thrombosis or tumour invasion, produces a characteristic syndrome of venous hypertension in the upper limbs, head and neck, with suffusion, cyanosis, oedema and the development of venous collaterals. The neck veins are distended and non-pulsatile bilaterally to the angle of the jaw with the patient upright. Partial occlusion of this vessel, such as may occur with mediastinal tumours, especially aneurysm of the aortic arch, causes a more misleading elevation of jugular venous pressure. Close inspection of the jugular veins, however, will show the normal pulsations to be damped or absent; differential pressures obtained by manometry from peripheral veins in the arm and leg are confirmatory. Obstruction of the right or left innominate vein, which is prone to occur with retrosternal goitre, gives rise to unilateral jugular venous hypertension with distension of the cervical veins on one side of the neck only.

During their short intrathoracic course to the heart, the great veins can be regarded as intrapleural, since they are subject to variations in intrapleural pressure. The normally negative intrapleural pressure which occurs with respiration has a siphoning effect, drawing venous blood to the reservoir of the right heart and the distensible venæ cavæ. Thus in normal subjects, right ventricular filling and stroke output are slightly greater after each inspiration and diminish with expiration; similarly, the upper margin of venous pulsation in the neck can be seen to wax and wane with respiration. Meyer and Middleton<sup>25</sup> have demonstrated

the rise in venous pressure which takes place during the apnoeic phase of Cheyne-Stokes respiration, when this normal siphoning action is withdrawn, and during performance of the Valsalva manoeuvre when it is replaced by positive intrapleural pressure. In patients with bronchial asthma, Kountz *et al.*<sup>26</sup> observed a marked rise during episodes of dyspnoea which fell to normal when the attacks subsided. They demonstrated that this rise was due to obstruction to the venous return, rather than to obstruction to flow in the lesser circulation producing acute cor pulmonale. Grellety-Bosviel<sup>27</sup> found no change in the antecubital venous pressure in 85 out of 100 cases of artificial pneumothorax, four of which were bilateral; in the remaining 15 cases the rise was slight and transient. This is to be expected, since in a properly induced artificial pneumothorax, the mean intrapleural pressure is kept at atmospheric or below.

Stenosis of the tricuspid valve is a cause of venous hypertension in the absence of ventricular failure. In this condition, prominent presystolic venous pulsations can be seen in the jugular pulse.

In pericardial effusion, hæmopericardium and adhesive or restrictive pericarditis, venous hypertension is an early and constant sign denoting inadequate filling of the right ventricle. That the rise in venous pressure is due to obstruction rather than to "forward heart failure" consequent on low cardiac output has been well shown by Caughey,<sup>28</sup> who noted the step-wise fall in venous pressure that occurred after removal of fluid from the pericardial sac of a patient with tuberculous pericarditis. Paradoxical inspiratory rise in venous pressure, a sign originally described by Kussmaul<sup>29</sup> in this condition, has been shown by Hitzig<sup>30</sup> to occur also in some other obstructive conditions and in severe right ventricular failure.

In hyperkinetic circulatory states and in hypervolaemia, the venous pressure is significantly but not strikingly elevated, except where failure has supervened. Hence it is important to distinguish slight elevations of venous pressure, of the order of +3 to +7 cm. H<sub>2</sub>O above the sternal angle, which are always accompanied by tachycardia and peripheral vasodilatation, representing a necessarily high venous filling pressure with increased cardiac output, in contrast with the substantially elevated venous pressures and peripheral vasoconstriction seen in congestive "low output" failure.

The commonest high output state is of course exercise. Albert and Eichna<sup>31</sup> described an average rise of 6 cm. H<sub>2</sub>O in the venous pressure of twenty normal controls immediately after two minutes' moderate exercise, Hooker<sup>32</sup> a rise of 10 cm. H<sub>2</sub>O after 30 minutes' violent exercise. In pregnancy, both blood volume and cardiac output increase to a maximum of about 50% above resting level at the commencement of the last trimester, and a commensurate rise in venous pressure occurs. As might be expected, it is at this time that cardiac decompensation is prone to occur in pregnant pa-

tients with valvular heart disease and it is a period when frequent inspection of the jugular venous pressure and familiarity with its physiological rise can prove most rewarding.

It is commonly stated (Wood<sup>7</sup>) that the venous pressure is elevated in hyperthyroidism. Golden and Brams,<sup>33</sup> however, found the venous pressure to be normal in 13 patients with hyperthyroidism. In hyperthyroidism, as in fever, increased cardiac output is achieved by tachycardia and peripheral vasodilatation without significant increase in stroke volume.<sup>34</sup>

In severe chronic anaemia, especially pernicious anaemia, McMichael has shown the presence of a high venous pressure and raised cardiac output, despite normal or low blood volume. That an elevation in venous filling pressure in addition to tachycardia is required to maintain a raised cardiac output in severe anaemia may be due to anoxic or nutritional compromise of the heart muscle itself. Gammill *et al.*<sup>36</sup> showed that a significant elevation in venous pressure in the absence of overt cardiac failure or diminished cardiac output was a constant early finding in patients within the first few hours following acute myocardial infarction.

High venous filling pressures have also been described in rarer hyperkinetic circulatory states such as arteriovenous fistula, osteitis deformans and beri-beri. In hyperkinetic states with left-to-right shunt, such as atrial septal defect and partial anomalous pulmonary venous drainage, the venous pressure is not usually raised, presumably because of the tendency to shunt reversal when the right atrial pressure exceeds that in the left atrium.

Increase in the blood volume tends to increase venous pressure. Gauer *et al.*<sup>37</sup> describe an average mean rise of 4 cm. H<sub>2</sub>O in the central venous pressure measured at catheterization in healthy young men transfused with 450 c.c. of blood in a 600 c.c. volume over a period of 8-12 minutes; this elevation in venous pressure was sustained for the observation period of 50 minutes. The tendency to precipitate cardiac failure by blood transfusion or the infusion of electrolyte solutions in patients with a limited cardiac reserve is well known.

The influence of the adrenal cortical hormones on the blood volume and cardiac output is currently being studied. As long ago as 1914, Hooker<sup>38</sup> noted a progressive rise in venous pressure during the day in bed patients, falling to a low in the early morning hours. A similar diurnal cycle of adrenal cortical secretory activity occurs, which may or may not have some connection. Thorn *et al.*<sup>39</sup> have shown that desoxycorticosterone increases blood volume and raises venous pressure, and Hitzig<sup>40</sup> has reported an interesting case of venous hypertension and oedema due to an adrenal carcinoma secreting a DOCA-like substance.

In severe hepatic cirrhosis, Davidson<sup>41</sup> observed elevated venous pressures in 7 out of 11 patients, and Kowalski<sup>42</sup> has shown that the resting cardiac

output is raised in many of these patients. It has been suggested that the peripheral vasodilatation in this disease, as evidenced by palmar erythema and cutaneous angiomas, is the cause of the hyperkinetic circulatory state, but the known propensity for these patients to retain fluid and electrolytes suggests that hypervolaemia may be a primary factor rather than a complicating one.

#### VENOUS HYPERTENSION IN CONGESTIVE FAILURE

Although the pathogenesis of venous hypertension in right heart failure is still debated, its existence is firmly established. As early as 1915, Clark<sup>43</sup> studied venous pressure by the indirect method in 14 patients with congestive failure. He observed the venous pressure lowering effects of venesection and digitalis, and noted that a rapid rise in venous pressure was an ominous prognostic sign; he also appreciated the fact that a rise in venous pressure anteceded all other signs of right heart failure. Although he felt that a venous pressure of 20 cm. H<sub>2</sub>O above the right atrium represented the level at which signs of congestive failure usually appeared, he recognized a wide range of variability, and this lack of correlation between degree of venous hypertension and onset of right heart failure has continued to irk investigators seeking a simple analogy in the venous system corresponding to the arbitrary definition of hypertension in the arterial system. It should be remembered, however, that the jugular venous pressure is indicative of competency of the right ventricle only, and that a patient with acute left heart failure and pulmonary oedema may have a normal jugular venous pressure. If the onset of right ventricular failure is defined as occurring when incomplete emptying of this chamber commences, it seems logical to assume that this can occur over a wide range of venous filling pressures in different individuals, depending on such diverse factors as degree of ventricular hypertrophy, presence of myocardial disease, or presence of functional pulmonary valve incompetence. It may then be said that, although venous pressure must necessarily be raised in right heart failure, no arbitrary value for the definition of failure on these terms can be set.

Nevertheless, in catheterizing patients with established heart failure, Bloomfield<sup>44</sup> found the average mean right atrial pressure to be +15 cm. H<sub>2</sub>O, Friedberg<sup>22</sup> gives +10–+20 cm. H<sub>2</sub>O above the right atrium as the usual range in such patients, and Wood<sup>7</sup> reports an average of +10 cm. H<sub>2</sub>O with reference to the sternal angle, but all these authors note a wide variation.

Patients are occasionally seen in advanced right-sided heart failure with hepatomegaly, oedema and ascites but little or no elevation in jugular venous pressure while at rest in their customary semi-recumbent position. A low cardiac output and the hydrostatic factors consequent on posture minimize the arterial perfusion of the upper portion of the

body while favouring its venous drainage. In these patients, gentle abdominal pressure, which serves to enhance venous return through the inferior vena cava, causes an immediate rise in jugular venous pressure. This phenomenon was described by Rondot<sup>45</sup> in 1898 and is termed hepato-jugular reflux; Pasteur<sup>46</sup> had described it three years earlier, but erroneously attributed it to tricuspid regurgitation. It is based on an abnormal response of the right ventricle to enhanced venous filling and thus indicates poor cardiac reserve, but the sign can also be elicited in cases of obstruction to venous filling which have not progressed to the point of elevating venous pressure. The normal response to the Pasteur-Rondot manoeuvre has been studied by Hitzig.<sup>47</sup> In a series of 670 normals, after one minute of steady manual compression of the right upper quadrant, the venous pressure remained constant in 89 while in the remaining 581 it fell 0.5–2.5 cm. H<sub>2</sub>O. In performing this test it is important to ensure that the patient continues to breathe freely and does not inadvertently perform a Valsalva manoeuvre.

In patients with a normal venous pressure in whom incipient right-sided failure is suspected, the Pasteur-Rondot manoeuvre may be employed, but a more satisfactory and generally disregarded test of cardiac reserve is the venous pressure response to exercise. A simple standardized test should be used which can be performed in bed. Szekely<sup>48</sup> suggested 20 straight leg-raising and showed that the response in normal persons is a slight rise in venous pressure with a return to the resting level within 30 seconds. In 18 patients in whom he had diagnosed severe cardiac disease but in whom the venous pressure at rest was normal, he was easily able to demonstrate a pathological response to exercise in terms of a significant and much prolonged rise in venous pressure.

#### SUMMARY

The significance of venous pressure is discussed from an historical aspect. The techniques of direct and indirect venous pressure measurement are reviewed and an attempt is made to show the superiority of the Lewis method of clinical estimation of the venous pressure by inspection of the jugular veins. Normal values for venous pressure are presented. The relationship of failure of the right heart to elevation of the venous pressure is discussed, and other conditions causing venous hypertension are briefly reviewed. A plea is made for the reintroduction of clinical estimation of the jugular venous pressure in the routine examination of the cardiovascular system.

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## Case Reports

### CALCIFIED ANEURYSMS OF INTERCOSTAL ARTERIES—CASE REPORT OF A PATIENT WITH SUBARACHNOID HÆMORRHAGE\*

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INTRASPINAL subarachnoid hæmorrhage is rarely observed and congenital aneurysms of the intercostal vessels are equally rare. Accordingly it was felt that the following case report was worthy of documentation.

J.S., a 49-year-old farmer, was admitted complaining of headache and stiffness of the neck of five days' duration.

The patient was perfectly well until five days before admission when, while driving his truck home after shovelling snow, his vision became blurred and a severe, persistent headache developed. Within a few hours he was admitted to a local hospital where neck rigidity was noted and urinary retention developed. There was no nausea, no vomiting and no loss of speech or consciousness. After a lumbar puncture revealed bloody cerebrospinal fluid (C.S.F.), the patient was transferred to the University Hospital.

Past and family histories were non-contributory.

Functional inquiry revealed a history of progressive pain in the upper right chest unrelated to activity or

respiration. This pain had been present for 15 months and was localized to the second thoracic dermatome.

Physical examination showed a healthy, adult male, lying in bed holding his head; he was mentally clear and co-operative. Eyes were normal; pupils reacted and accommodated, and fundi were also normal. Neck showed marked rigidity and the head was held in extension. Chest examination was negative; B.P. 132/80. Extremities were normal. Neurological examination showed only neck rigidity and diminished straight leg raising. All reflexes were present and normal. There was no muscle wasting or loss of strength, power or sensation in the limbs.

A provisional diagnosis of subarachnoid hæmorrhage was verified by a lumbar puncture which revealed 34,200 red cells per c.mm. of spinal fluid.

*Progress*—Over the following three weeks the headache and neck rigidity regressed but the chest pain became more severe, began to radiate down the inner aspect of the right arm to the elbow and was then exaggerated by cough. Neurological examination remained negative.

Bilateral carotid angiograms were negative. Myelograms showed no abnormality of cervical or thoracic spinal canals. Electroencephalogram was normal. Electrocardiogram showed sinus rhythm with fluctuating ischaemic changes but no definite evidence of disease. Kahn and Wassermann tests were normal. Haematological tests, blood chemistry, and urine analysis were normal. C.S.F. was normal once the blood had cleared from it.

Radiographs of the skull and cervical and thoracic spines were normal. Those of the chest and the upper thoracic planigrams revealed a small calcified lesion in the upper right chest (Fig. 1a and b). Although it was felt that the mass was benign, the progressive pain in the dermatomes (T 2 and 3) related to this tumour led us to explore his chest.

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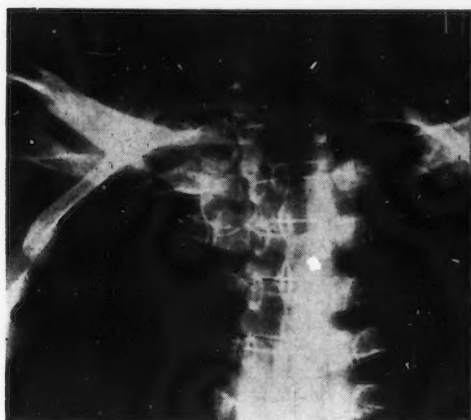


Fig. 1a



Fig. 1b

Thoracotomy revealed the calcified lesion to be an aneurysm in the third intercostal space. There were similar non-calcified lesions in the second and first interspaces abutting the spine (Fig. 2). The sym-



Fig. 2

thetic chain was stretched over the aneurysms which ceased to pulsate when the innominate artery was occluded but continued to pulsate when the subclavian artery was compressed. It was felt that the feeding vessel was arising in the thoracic outlet or in the neck, from which it appeared to be descending. The second and third sympathetic ganglia were resected and the chest was closed. Because the patient's symptoms were not relieved, the base of the neck was explored six weeks later through a right supraclavicular incision and the feeding vessel found coming down from in front of the cervical spine. An arteriogram of the right common carotid artery outlined that vessel, the right subclavian and part of the innominate artery; no abnormal vessels were seen (Fig. 3). A second arteriogram, with dye injected into the abnormal vessel, was technically poor but demonstrated a vessel ascending the neck but no filling of the carotid or subclavian arteries. When this abnormal vessel was traced to its source it was seen to be ascending the neck to the level of the fifth cervical vertebra, dipping into the substance of the longus colli muscle, and then arching downward to arise from the innominate artery near the origin of the right common carotid artery. Upon occluding this vessel the intercostal aneurysms ceased to pulsate. Accordingly the vessel was doubly ligated at its origin; its resection included the aneurysm in the first inter-

space. It was not felt advisable to do more as the lower aneurysms ceased to pulsate. The incision was closed and the patient discharged on the eighth postoperative day symptom-free.

Histological examination of the resected vessel showed a thin-walled artery with a sac-like out-pouching on one side at which point there was complete disruption of the internal elastic lamina and most of the media. There were varying degrees of atherosclerosis, the intima was markedly thickened and the internal elastica and media were almost totally replaced by loose-textured fibrous tissue (Fig. 4). The final diagnosis was congenital saccular aneurysm.

#### COMMENT

Aneurysmal dilatations of the intercostal arteries are rare in the absence of coarctation of the aorta. The patient reported here was felt to be suffering from congenital aneurysms of the posterior intercostal arteries to the first three intercostal spaces. It is known that the branches of the subclavian artery may be quite irregular and may arise more medially than usual. Although the exact nature of the vessel in this patient cannot be accurately stated, we feel that it is most likely an abnormally placed costo-cervical trunk arising directly from the innominate artery. The aneurysms arose from the posterior intercostal arteries which are branches of the superior intercostal artery. It must be postulated, too, that the latter vessel supplied three intercostal branches, rather than the usual two.

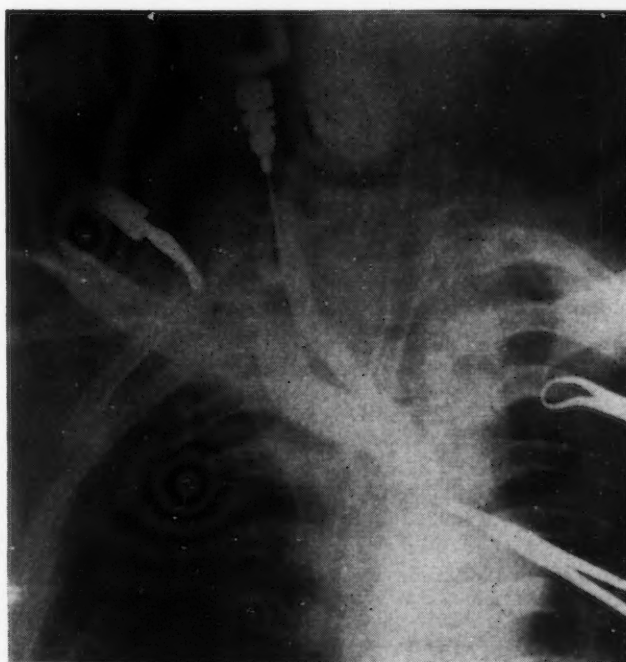


Fig. 3

The aneurysms must have been pressing upon and irritating the second and third intercostal nerves, which would explain the pain down the inner aspect of the right arm and around the front of the chest. As resection of the second and third sympathetic ganglia, which were stretched over the aneurysms, did not relieve the pain, it cannot be said that his pain was from sympathetic irritation.



Fig. 4

The relation between the episode of subarachnoid hæmorrhage and the aneurysms cannot be satisfactorily explained. The onset of the headache had been preceded by premonitory symptoms of blurred vision and unsteadiness, longer in duration and greater in degree than usually described by patients who have a rupture of an intracranial aneurysm. Such patients almost always experience a severe headache as the initial symptom. The unusual history plus the absence of an intracranial aneurysm on carotid angiography suggests the possibility, even the probability, that the subarachnoid hæmorrhage may have been due to the rupture of an abnormal intraspinal vessel associated with the aneurysms of the intercostal arteries. Intraspinal subarachnoid hæmorrhage is rare but the authors feel that it should be considered as the probable source of bleeding in this man.

#### SUMMARY

A case of subarachnoid hæmorrhage associated with multiple congenital intercostal aneurysms is reported. It is felt that this is probably a case of intraspinal subarachnoid hæmorrhage.

### CYSTICERCOSIS: MULTIPLE INFARCTS AND NECROSIS IN BONE\*

MICHAEL LENCZNER, M.D. and  
D. G. WOLLIN, M.D.,\* Toronto

REPORTS ON cysticercosis in immigrants from infested areas are increasingly frequent in American medical literature.<sup>1</sup> Cases in which humans act as the intermediate host may manifest themselves either with cerebral symptoms or with calcified parasites in the muscular tissues, particularly the thighs. These latter are often observed quite accidentally during routine x-ray examination.

The diagnosis may present great difficulties. In the early stages of the infestation, the diagnosis remains only a presumptive one based on symptoms and history as to soil and seed. There are no pathognomonic laboratory methods with which to clinch the diagnosis. Only after calcification occurs in the dead embedded parasites are they demonstrated roentgenologically. This may take many years after the initial invasion of the tissues.

The authors have had the opportunity of observing a case of cysticercosis associated with multiple infarcts in the bones† with no clinical symptoms which would lead one to suspect infestation by this parasite. No mention of infarction of bone by cysticerci has been found in the literature.

J.N., aged 52, complained of localized redness and swelling over the lower part of his right tibia. This had occurred after a long walk over snow-covered fields during which heavy boots were worn. General physical examination was entirely negative and the patient was referred for x-ray examination.

The patient was born in Poland and had lived on a farm in Galicia in that country until 18 years of age. He was one of nine siblings. He had typhoid fever when nine years of age and rheumatic fever when 18 years of age. He was conscripted and served in the Polish Army for two years. He emigrated to Canada in 1927 and worked as a construction labourer for four years. For the past 24 years he has been a handyman in a factory. He has enjoyed good health since coming to Canada.

The roentgenological findings are as follows:

Several elliptical, irregularly calcified shadows (varying from 4 to 11 mm. in length and from 1 to 4 mm. in width) are present in the soft tissues of the thighs. These calcifications are typical of calcified cysticercosis. The soft tissues of the remainder of the body contain very few of these calcified densities. In each femur (Figs. 1 and 2), occupying the lower half of the medullary space, is seen a long, irregularly calcified shadow which forms a cast of the medulla itself. In the right femur there is no reaction in the overlying cortical bone, but there is well-marked periosteal new bone formation on the lateral aspect of the right femoral shaft just distal to the greater

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†This case was referred by Dr. Ian Macnab, whose permission to publish it is gratefully acknowledged.



Fig. 1.

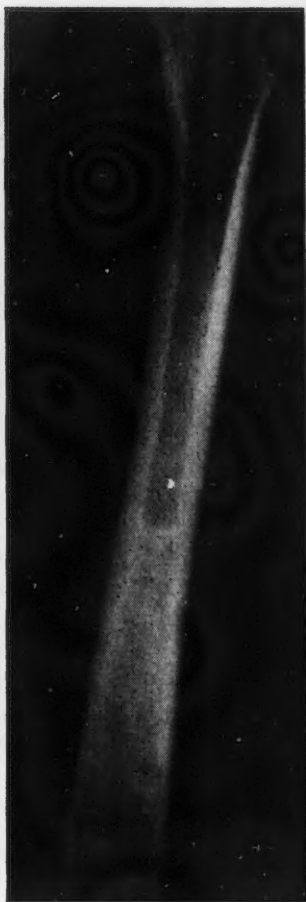


Fig. 2.

Fig. 1.—Right femur. Multiple small elliptical densities, indicative of cysticercosis in the muscles of the thigh. Extensive infarction of bone in the distal half of the femur. Fig. 2.—Left femur. Multiple elliptical cysticerci in the soft tissues of the thigh. Gross infarction of bone in the distal half of the left femur.

trochanter. The shadow in the medullary cavity of the left femur is more homogeneous. The medial cortex of the shaft of the left femur is thickened slightly, presumably by periosteal new bone formation. In the tibiae (Fig. 3) are symmetrically placed intramedullary calcified shadows. The shadows in the proximal ends are larger than in the distal ends. The reaction at each site in the left tibia is greater than in the right tibia. The appearances of the lesions in the femora and the tibiae are typical of bone infarcts, as demonstrated in published accounts of caisson disease.<sup>2-4</sup>

Laboratory tests were noncontributory. Urinalysis was negative. Serological tests in the blood were non-reactive. The red cell count was 4,300,000; Hb. 72%; white cell count 9050 with a differential count of 62% neutrophils, 25% lymphocytes, 9% monocytes and 4% eosinophils. Serum calcium and phosphorus levels were normal. Stool tests for ova, cysts or parasites were negative.

In view of the roentgenological findings, biopsy was contemplated but decided against for the following reasons:

(a) A needle biopsy could be expected to reveal only necrotic infarcted bone, not the true etiological agent.

(b) A surgical biopsy ran the risk of complications in a patient having no symptoms referable to the cysticercosis.



Fig. 3.—Both tibiae. Short segments of infarction in the proximal and distal ends, the lesions being greater in the left tibia than in the right.

#### SUMMARY

A case of cysticercosis associated with multiple infarction and necrosis of bone is described. The coincidence of cysticercosis and bone infarction suggests the deposition of the larvæ in the vessels of the bones involved.

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#### EVALUATION OF SURGICAL PROCEDURES EMPLOYED AFTER FAILURE OF IRRADIATION THERAPY IN CANCER OF THE CERVIX

One hundred and twenty patients, including 80 who had previously been irradiated, were subjected to definitive surgery. Surgical injuries were three times as common in the previously irradiated patients. Mortality rates were in direct proportion to the magnitude of the surgery undertaken.

When the lesion is clearly localized to the cervix, the prognosis for five-year survival is excellent. The two- to five-year salvage rate for all types of exenteration was 23.5%, and in cases treated by extirpation of the genital organs alone was 74.3%. The hospital mortality rate in 51 exenteration cases was 33.3%.

The status and recovery of the upper urinary tract profoundly influence survival rates.—H. E. Schmitz *et al.*: *Am. J. Obst. & Gynec.*, 74: 1165, 1957.

# A LESION SIMULATING SQUAMOUS CARCINOMA OF THE LIP (KERATO-ACANTHOMA)\*

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KERATO-ACANTHOMA, a benign self-healing lesion of the skin, recently has become a well-recognized entity. The lesion simulates grossly as well as microscopically a low-grade squamous-cell carcinoma and occurs predominantly upon the face, neck and exposed surfaces of extremities. However, its occurrence upon the vermilion of the lips is not widely known and, judging by the scarcity of reported instances,<sup>1-5</sup> such cases may be considered as rare and unusual.

J.O'N., a 45-year-old male, noticed a small nodule on the left side of the lower lip which appeared during a common cold in the middle of February 1957 and showed a tendency to increase in size. Physical examination revealed a pea-sized nodule in the left segment of the lip located astride its vermilion margin. The lesion was hard and slightly tender. Its central area was covered by a scab and it had somewhat rolled edges. Cervical lymph nodes were not palpable. Other systems were essentially negative. A clinical diagnosis of carcinoma of the lip was made and the lesion was excised on April 18, 1957.

**Gross examination.**—The specimen represented a wedge-shaped portion of the lower lip measuring approximately 1.0 x 1.0 x 1.0 cm. in its greatest dimensions. The central portion of the surface of the specimen was occupied by a raised circular growth measuring 0.6 cm. in diameter. The periphery of the growth was covered by unremarkable skin and thickened mucosa of lip. The central portion showed a shallow ulcer-like crater with rolled edges. This measured about 0.4 cm. in diameter and was covered by a friable grey material. On section the nodule was seen to be composed of friable pale-grey tissue which extended into the lip for a depth of about 0.5 cm.

**Microscopic examination.**—Sections showed a fairly circumscribed raised lesion composed of irregular columns of proliferating squamous epithelium. The epithelium produced large quantities of keratin, deposited in the form of keratin pearls or horn cysts within the columns and in the form of keratin plugs in the upper part of the lesion. Connective tissue below the lesion and between the epithelial columns showed oedema and massive exudate comprised mainly of lymphocytes, plasma cells, histiocytes and a few neutrophil leukocytes. In a number of areas the epithelial columns were infiltrated by a few neutrophils, and a number of horn cysts resembled microabscesses. The cells of the squamous epithelium were well differentiated, and showed in many instances individual keratinization, evidence of degeneration and occasional mitotic figures. Basement membrane was not always recognizable and the epithelium appeared to be invading the neighbouring inflamed connective

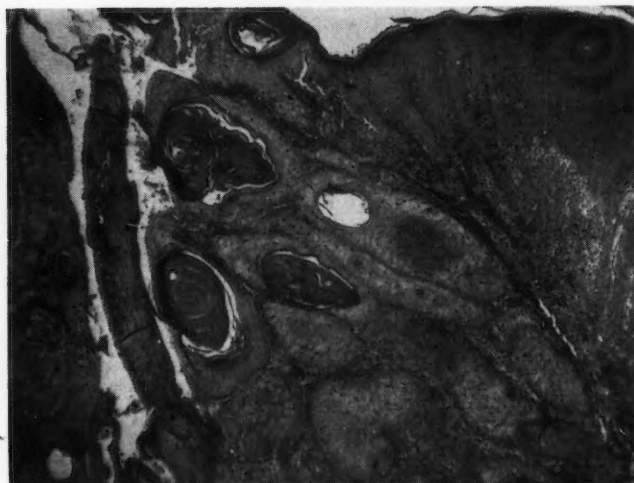


Fig. 1.—Kerato-acanthoma of the lip. The lesion is composed of irregular columns of proliferating squamous epithelium containing keratin cysts and pearls and surrounded by massive round cellular exudate. At the upper right the edge of adjacent epidermis shows considerable acanthosis and tends to overlap the lesion. H.P.S.  $\times 40$ .

tissue. The epidermis and the epithelium of mucosa around the lesion showed some acanthosis and hyperkeratosis but no evidence of malignant change. In some sections the epithelium, both of skin and mucosa, overlapped the edge of the lesion. The mucous glands of the lip showed oedema and contained a round-cell exudate.

Initially this lesion was diagnosed as a low-grade squamous-cell carcinoma but it was strongly suspected that it might represent a kerato-acanthoma.

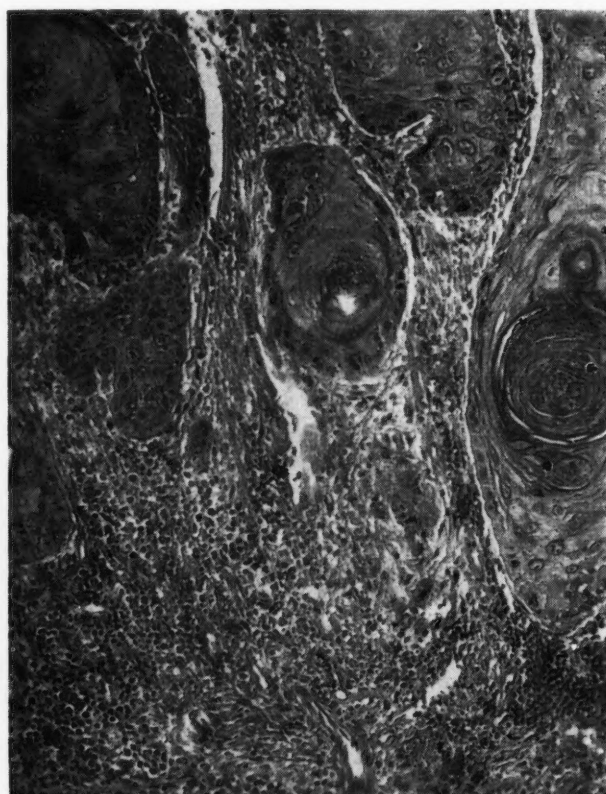


Fig. 2.—Kerato-acanthoma of the lip. Deep part of the lesion showing "invasion" of inflamed connective tissue by squamous epithelium in a manner strikingly similar to that seen in squamous carcinoma. The epithelium, however, is well differentiated and mitotic activity is minimal. H.P.S.  $\times 300$ .

\*From the Departments of Pathology of St. Joseph's and Civic Hospitals, North Bay, Ont.

Sections were sent for consultation to Dr. H. K. Fidler, Clinical Professor of Pathology of the University of British Columbia, who considered the lesion to be a kerato-acanthoma.

#### COMMENT

The existence of kerato-acanthoma was brought to the attention of the general medical profession in this country by Veidenheimer and Fidler.<sup>6</sup> Kerato-acanthoma is a benign self-healing lesion of the skin which begins as a small, painless spherical elevation and usually does not attain a size of more than  $\frac{1}{2}$  inch (1.27 cm.) in diameter. A fully developed lesion usually appears as a pale, pinkish-grey or red, smooth, dome-shaped, firm nodule with a crusty centre. Small ectatic vessels may at times traverse the periphery of its surface. When central crust or "keratin plug", as it is commonly referred to, disintegrates and falls off, the lesion assumes the appearance of an ulcer with elevated and rolled edges. At this stage it resembles clinically either squamous-cell or basal-cell carcinoma. Microscopically a fully developed lesion is composed of irregular columns of proliferating, hyperplastic and hyperkeratotic squamous epithelium extending into the underlying inflamed connective tissue. The epithelium is well differentiated, shows minimal mitotic activity and produces large quantities of keratin. Basement membrane around the epithelial columns is not always apparent and therefore the epithelium seems to invade the connective tissue in a manner similar to that seen in true squamous-cell carcinoma. The lesion, however, possesses a characteristic slightly overlapping edge consisting of relatively normal and at times acanthotic squamous epithelium. This feature is an important factor in histological diagnosis, since the positive differential diagnosis between kerato-acanthoma and carcinoma on the tissue obtained from the deep parts of the lesion may not be possible.<sup>6</sup>

A striking clinical characteristic of kerato-acanthoma is its rapid development. The lesion usually attains its maximum size in four to 12 weeks, after which it undergoes a slow process of involution extending over a period of two to four months. Occasionally, however, the lesions may persist up to 12 months. According to Calnan and Haber,<sup>8</sup> the age incidence of kerato-acanthoma in both sexes is from 15 to 78 years with a peak between 40 and 70. The peak in the series of Veidenheimer and Fidler was between 55 and 65 years.

Kerato-acanthoma usually develops upon the exposed surfaces of the skin, predominantly on the cheeks and at the base of the nose, ears, neck and hands. Rook and Whimster, according to Rabut and Hewitt,<sup>1</sup> insisted that kerato-acanthomas do not occur on the vermilion of the lips. They believed that kerato-acanthomas arise from the pilosebaceous follicles of the skin (hence the synonym "molluscum sebaceum"), and the absence

of the latter beneath the mucosa of the lip plus the failure to find the lesions in such locations was used as supporting evidence of this theory. However, Rabut and Hewitt and later Ereaux *et al.*,<sup>2</sup> Spier and Thies<sup>4</sup> and Whittle and Davis<sup>5</sup> each reported single cases of kerato-acanthoma of the lip. Furthermore, Binkley and Johnson<sup>3</sup> mentioned in their paper another case observed by Cole and Driver. The case of Gautard<sup>7</sup> was erroneously placed into this group by Spier and Thies, since the lesion did not arise upon the vermilion of the upper lip but below the right nostril. The above five cases, together with that described here, make it evident that kerato-acanthomas do occur on the vermilion of the lip and that the presence of pilosebaceous follicles is not essential for their development. The possibility that the kerato-acanthomas may arise from the skin adjacent to the mucosa of the lip cannot be denied, though, according to Spier and Thies, Grzybowski saw kerato-acanthomas even upon the oral mucosa.

Veidenheimer and Fidler state that "Heretofore many of these [cases of kerato-acanthoma of skin] would have been considered low-grade squamous-cell carcinomas both clinically and histologically." In their series the incidence of kerato-acanthoma was more than one-third of that of squamous-cell carcinoma and they stated that a similar incidence was reported by Beare. According to Whittle and Davis its incidence was reported by Rook as about one-half that of carcinoma. Kerato-acanthoma of the lip has been apparently overlooked and at present the frequency of its occurrence is not known. However, basing the speculation upon the above-mentioned series of kerato-acanthoma of the skin, the incidence of kerato-acanthoma of the lip, as compared to squamous-cell carcinoma in the same location, may be perhaps of a similar amplitude. Therefore, it seems of importance to re-examine the files of squamous-cell carcinoma of the lip at larger institutions in order to establish the frequency of occurrence of kerato-acanthoma and to re-evaluate accumulated statistical data concerning the treatment of carcinoma.

The etiology of kerato-acanthoma of the skin is not known, but trauma, tars, certain oils and gases, actinic rays and virus have been suggested as possible factors. As regards the latter, it is of interest to note that the lesions of the lower lip reported by Ereaux *et al.* and Whittle and Davis developed upon the sites of a herpes simplex and a "cold sore" respectively. Furthermore, the lesion in the case of Ereaux *et al.* was followed by another which appeared upon the upper lip in juxtaposition to the first, and they were able to obtain from the cutaneous lesions what they believed to be a virus. Unfortunately it is not known with certainty whether or not the lesion was preceded by herpes simplex in the case reported here.

The clinical diagnosis of kerato-acanthoma can be made apparently without much difficulty, once

familiarity with the lesion has been obtained, since out of 105 cases reported by Calnan and Haber only 80 were studied microscopically. The diagnosis should be suspected if the lesion looks like either squamous-cell or basal-cell carcinoma but develops with unusual speed. However, a neatly performed wedge biopsy or a complete excision would be needed to dissipate doubts about the diagnosis and to prevent possible consequences of missed malignancy.

As stated above, the lesion heals spontaneously and the proposed treatments such as by curettage, x-ray, radium implantation, electrocautery, silver nitrate cautery, hydrocortisone and antibiotic ointments, podophyllin, mapharsen and others seem to be too variegated to be of value and consequently are probably excessive. Dangers of radium treatment were clearly demonstrated by the case of Ereaux *et al.* (which was diagnosed initially as carcinoma), in which the patient required extensive plastic surgery as its consequence. One cannot but agree with the conclusion of Veidenheimer and Fidler that in cases where cosmetic considerations exist, "excision is the treatment of choice as it allows histological study of the complete lesion and moreover the resulting scar is usually less disfiguring than the scar remaining from a spontaneously healing lesion." In treatment of such lesions on the lip a similar policy can be followed. However, if the lesion is very large it should probably be left alone after performance of a biopsy in order to prevent induction of a man-made and perhaps worse disfiguration than that following a natural healing.

#### SUMMARY

A case of kerato-acanthoma of the lower lip is recorded. It is believed that this represents probably the sixth instance on record. Clinical aspects, pathology, etiology and treatment are discussed briefly.

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#### EFFECT OF DERMABRASION ON FINGERPRINTS

Burks (*A.M.A. Arch. Dermat.*, 77: 8, 1958) reports on the effects of dermabrasion (wire brush planing) in two cases of arsenical keratosis of the palms. Fingerprints were taken before and after dermabrasion. Following dermabrasion the fingerprints were considered worthless in establishing the identity of the subject. The obvious medico-legal aspects are discussed. The effects on the arsenical keratoses are not noted.

#### URINARY SCHISTOSOMIASIS: REPORT OF A CASE IN A CANADIAN SOLDIER

MAJOR W. J. VAIL, M.D.,\* *London, Ont.*

IN CANADA, urinary schistosomiasis is an uncommon disease. With modern travel and many of our armed forces stationed for prolonged periods in known endemic areas, it is felt that a discussion of a case may be of interest.

A 17-year-old soldier was admitted to hospital with complaints of mild suprapubic burning and general malaise. Functional enquiry was negative. The patient had lived in Southern Rhodesia from 1948-1951 and in Israel for six months in 1956. On his return from Israel a routine urinalysis showed some abnormality which caused his physician to do a cystoscopy. The patient was informed that he had an ulcer on his bladder wall for which treatment was prescribed. Urinalysis on admission, and repeated throughout his stay in hospital, demonstrated microscopic pyuria and hæmaturia. Hæmatological tests showed a sedimentation rate of 36 mm. per hour, a normal hæmoglobin, a total white cell count of 9400 and a differential of neutrophils 52%, lymphocytes 24%, monocytes 5%, eosinophils 15%. Urine cultures were negative for acid-fast and common pathogens. Intravenous pyelography was negative. Repeated prostatic examinations were negative except on one occasion when a smear showed a considerable number of pus cells, and a culture grew bacteria sensitive to chloromycetin. These latter findings, in association with some vague improvement in urinalysis findings when he was on chloromycetin therapy, made a diagnosis of chronic prostatitis seem possible. The patient was released from hospital to be followed up as an out-patient.

Approximately one month after this hospitalization, the patient returned with a complaint of occasional dysuria of approximately a week's duration. The urinalysis demonstrated findings similar to those of his first admission. Hæmatological test showed a sedimentation rate of 12 mm. per hour, a normal hæmoglobin, a white cell count of 9500, and a differential of neutrophils 58%, lymphocytes 31%, monocytes 3%, eosinophils 6%. Urine cultures were negative. Prostatic smear examinations were negative. Intravenous pyelography was negative. A retrograde pyelogram was negative, but cystoscopy under local anæsthesia showed a little granularity around the left ureteral orifice and it was recommended that a biopsy of this lesion should be done under general anæsthesia at a later date.

At the time that the cystoscopic findings were noted, it was suggested that in view of the patient's travels in Africa and Israel, a search for schistosomiasis would be productive. Microscopic study of approximately 12 urine specimens showed four typical *Schistosoma hæmatobium* ova.

Stool and blood examinations were negative for ova. A barium enema and a sigmoidoscopy were negative. Liver function tests were negative.

The patient was then treated with Lucanthone Hydrochloride (1-(2-diethylaminoethyl)-4-methylthi-

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axanthone). Six weeks after treatment the patient was asymptomatic, urinalyses were negative, and no ova were found on repeated urinalysis. Cystoscopy still demonstrated some granularity about the left ureteral orifice but both orifices moved well with ureteral jets. This examination was the last which we were able to conduct on the patient, but it is felt that he was cured of his disease.<sup>1</sup>

#### Review of Life Cycle

Schistosomiasis (bilharziasis) is produced by blood flukes, of which there are three important species of the genus *Schistosoma*. *Schistosoma japonicum* is distributed throughout the Far East, and typically infects the small bowel wall. *Schistosoma mansoni* is distributed in Africa, Asia Minor, the West Indies and South America, and typically infects the large bowel wall. *Schistosoma hæmatobium* is common in Africa and is prevalent in Syria, Israel and Iraq, and typically affects the urinary system. This is an over-simplification of endemic areas and sites of pathology, as more recent investigations suggest that more than one anatomical area may be involved with any one species.

The life cycle of all *Schistosoma* is similar and will be briefly reviewed.

The schistosomal ova come in contact with fresh water and hatch, and the miracidia enter certain species of snails. A twofold multiplication takes place within the snail, and cercariæ emerge. These larvæ penetrate under the scaling epithelium of humans into their hair follicles and burrow down to the peripheral capillaries. The cercariæ are then transported through the circulatory system; only those reaching the portal vessels survive. The larvæ feed on blood, and migrate against the portal flow to the mesenteric and vesicle venules, according to their species predilection. At the end of incubation (*Schistosoma hæmatobium* 10-12 weeks) the worms mature, mate and lay eggs. From within these eggs a viscous fluid is produced which digests the venule, and ova are excreted from a ureteral orifice.

Histologically a pseudo-tubercle is seen which is considered a lesion caused by the ova retained in the tissues.

#### SYMPTOMS AND DIAGNOSIS

Early *Schistosoma hæmatobium* infection may be asymptomatic or may produce minimal urinary symptoms as in our patient, who had some slight dysuria and suprapubic burning. The late symptoms are usually secondary to urinary obstruction at the ureteral orifices. The impression that carcinoma of the urinary tract is more prevalent after this disease may be based on inconclusive evidence.<sup>2</sup>

The diagnosis of *Schistosoma hæmatobium* is most easily done by microscopic scrutiny of a lightly centrifuged terminal specimen of urine in which the characteristic terminally spiked ova are seen. Examination of the stools and rectal biopsy are of assistance. There is a skin antigen test which is useful for epidemiological studies as a negative screen. A more technical miracidial hatching technique is available.

Eosinophilia is not considered a diagnostic point, being present early in the disease.

#### TREATMENT

The accepted treatment for urinary schistosomiasis is Lucanthone Hydrochloride, a non-metallic synthetic product, given orally. This drug is relatively non-toxic, and minor side effects usually disappear when its use is discontinued. In 1955 over 51,000 persons were treated in Southern Rhodesia, with no known serious sequelæ.<sup>2</sup> The cure rate appears to approximate 80%.<sup>1-3</sup> There is some uncertainty as to recommended dosage and duration of treatment, but the more successful series suggests a total dosage of 60-100 mg. per kg. of body weight in divided doses over a five-day period. Our patient received a total dosage of 75 mg. per kg. of body weight in divided twice-daily doses over a period of five days.

The antimonial group of drugs which are frequently recommended appear to be quite toxic and require some experience in application; treatment with them is prolonged, up to six weeks. Some doubt is cast upon their curative value in *Schistosoma hæmatobium* infection,<sup>2</sup> yet in other schistosomal infections they may be the drug of choice. A cure can usually be considered if urinalysis is negative for ova after four weeks.<sup>1</sup>

#### SUMMARY

A case of schistosomiasis due to *Schistosoma hæmatobium* is discussed. It demonstrates that when one is aware of the possibility of this disease, diagnosis becomes very simple.

Bilharziasis is very briefly discussed, some emphasis being placed upon the diagnosis and treatment of *Schistosoma hæmatobium* infection.

This case is brought to the attention of Canadian doctors at this time, when our armed forces in the U.N.E.F. are stationed in areas endemic for this disease.

I wish to express my appreciation to Dr. J. A. Lewis, Chief of Service Medicine, Dr. S. M. Busby, Genito-Urinary Consultant, Dr. J. C. Paterson, Pathologist, and Miss E. Clarke, Laboratory Technician, all of Westminster Hospital, Department of Veterans Affairs, London, Ontario, for their invaluable specialized assistance.

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#### NODULAR PERIPHLEBITIS: A RHEUMATIC DISEASE?

In a 70-year-old man, widespread inflammatory nodules developed in the extremities and on the face. There were also exophthalmos and swelling of lids, suggesting cavernous sinus disease. The nodules, which had been indolent for three years before his admission, became very painful and some could not be separated from superficial veins. No involvement of arteries was detected. Histologically the changes resembled a rheumatic process. There was good response to salicylates and cortisone, and the authors believe that this is a rheumatic disease.—H. Schnack and F. Wewalka: *Deutsche med. Wchnschr.*, 82: 2222, 1957.

## Special Article

### ON TRANSFUSION REACTIONS AND TRANSFUSION SERVICES

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IN TWO PREVIOUS ARTICLES I have dwelt on transfusion of girls and women leading later to erythroblastosis in their babies. Here I will speak of transfusion reactions in adults.

In the cases to be reported all the patients suffered obvious, gross transfusion reactions; in four life was threatened. But, in addition to this type of reaction, mild, often inapparent transfusion reactions occur in which the donor blood is destroyed over a period of hours or a few days rather than in minutes, the destruction being evidenced either by the mildest of symptoms or by none at all; the patient's red cell count and haemoglobin value fail to rise, and when the blood is further examined an antibody against the donor's cells is found, while no donor cells can be identified in the patient's circulation. How often this type of quiet destruction occurs I do not know; we have investigated a number of examples. The following are all examples of severe reaction.

Mrs. A., following her first delivery in 1954, was given two transfusions. After her second delivery she bled alarmingly and was given two bottles of group O, Rh-negative, emergency blood, unmatched. Within a few hours she was jaundiced; her kidney output dropped almost to zero. No donor cells could be demonstrated in her circulation. Under medical treatment she recovered and was able to leave the hospital at the end of two weeks.

The antigen-antibody combination in this case is too complex for discussion here; suffice it to say that the incompatibility was in the Kell blood group system, and that the patient, as the result of the 1954 transfusions, had developed antibodies which make her blood incompatible with that of practically everyone; we know of but a single compatible donor.

Many hospitals keep group O, Rh-negative, so-called emergency blood on hand and use it without cross-matching. Such blood has an aura of sanctity, of purity about it: not only is it *group O*, and so has neither the antigen A nor the antigen B, but it is *Rh-negative*. *Negative!* What does Rh-negative mean? Whatever else it means, it means that it has for certain the Rh antigens c and e, the former of which has caused many transfusion reactions and the latter very few, and that it has some combination among about 40 other antigens, most of which have been known to cause transfusion reactions. Except in dire emergency *no* blood should ever be used without cross-matching, and cross-matching by the best techniques.

Mrs. B., following an abortion, was given a transfusion. Five years later she was given a second transfusion of cross-matched blood. She had a severe reaction with jaundice and anuria and was in hospital a month. Re-examination of her blood proved it to contain an anti-Duffy antibody, which was the cause of the transfusion reaction, the donor being Duffy-positive. The technique in use in the cross-matching laboratory did not allow it to demonstrate the incompatibility either before or after the transfusion.

Miss C., a woman of 37 years, known to be Rh-negative and to have received a number of transfusions in the past, was, in preparation for operation, given two bottles of Rh-negative cross-matched blood. After the second bottle she had back pain, chills, a fever of 103.2° F., and vomiting, followed by anuria. Under medical treatment she recovered and was able to leave the hospital a month later; her operation was delayed two years. The patient's serum was found to contain anti-Rh (anti-D) and anti-Kell antibodies, the blood to which the patient reacted being Rh-negative, but Kell-positive. The cross-matching laboratory was unable to demonstrate the incompatibility either before or after the transfusion by the techniques then in use.

The following case is abstracted from an article by MacNeill *et al.*<sup>1</sup> because the patient suffered a transfusion reaction in a hospital in Canada; she was later treated in the Buffalo General Hospital. The patient, a woman of 47, had been transfused at the age of 42 and of 44 for "anaemia". She was now admitted for cholecystectomy. Preparatory to the operation she was given two transfusions; after the second she had chills lasting an hour and passed red urine. In spite of this warning she was given a further transfusion on the operating table; she had a transfusion reaction, became anuric, passed into coma and was finally rescued through the use of Dr. MacNeill's blood dialyzer (often erroneously called an artificial kidney) at the Buffalo General Hospital. She was in hospital 46 days after the operation. The antibody involved was anti-Kell; if cross-matching was done, the technique was obviously inadequate.

The following case came close to being similar to the fatal one reported recently in the *Journal*.<sup>2</sup> Mrs. D. was followed through the course of her pregnancy because she was Rh-negative and had an anti-Rh antibody in her blood. Following delivery her haemoglobin value went down to 48% and a transfusion was ordered. The hospital laboratory typed the patient as Rh-positive, and a transfusion of Rh-positive blood was started. Before much had been given the patient developed back pain and had a chill, and so the transfusion was fortunately stopped. After the transfusion her anti-Rh antibody titre rose from 4, which had caused no disease in her baby, to 256. Her husband is homozygous Rh-positive. The prognosis for future pregnancies is not good. In this case both the blood grouping and the cross-matching, if it was done, were at fault.

The Canadian public has responded generously to the call for blood donors; the Canadian Red Cross has done a huge job of work in supplying all the blood the profession has demanded. But certain evils have arisen out of a generous gift and a task accomplished. First, blood has, in most

\*From the Rh Laboratory, 735 Notre Dame Ave., Winnipeg 3, and the Department of Paediatrics, University of Manitoba. This is the last of three articles.

centres served by the Red Cross and its volunteer donors, been so readily available that use has become abuse. I am certain that well over half of the blood now being used is used unnecessarily. This is wasteful. Even more, it is dangerous, and in this series of articles I have tried to indicate some of the dangers; I have said nothing about the danger of hepatitis following whole blood transfusion or about certain other dangers, but have limited myself to some sequelæ of blood group sensitization. Second, when the Red Cross undertook to develop a free national transfusion service, it took from most hospitals, and from most universities too, a first-hand knowledge of immunohæmatology. With certain exceptions our hospitals and universities not only have not added to our knowledge in this field but have not even kept up with the new knowledge that has developed in the past 17 years. This is serious. It has not only retarded advance of knowledge but has rendered many hospitals technically incompetent in the field of blood transfusion; in at least three of the above cases the reactions were due to errors of blood grouping or cross-matching technique.

What can be done about all this? The problem of over-transfusion can be solved only by the profession. The responsibility devolves upon the individual physician and upon the organized hospital staffs.

Personally I should like to see the transfusion service become a co-operative effort shared by the Red Cross and the hospitals, the Red Cross supplying most of the donor blood but the hospital being responsible for typing, matching and the use of blood and, where desired, for at least a part of the donor blood. Such an arrangement would require that the blood bank and transfusion service in the larger hospitals be in charge of a competent and responsible medical director provided with an adequate staff and given reasonable authority over the issuing of blood; smaller hospitals might well form a liaison with the larger ones, might in essence become branch offices of the blood banking system, and have their personnel trained and kept up-to-date by the parent bank.

There is a drawback; any such arrangement will cost money. The costs would presumably be hospital costs and would be included in hospital rates, whether the rates were paid on a personal basis or through hospital insurance—Blue Cross, commercial or state. I can see no other way out of our present dilemma.

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#### RADIATION DAMAGE CAUSED BY SHOE-FITTING FLUOROSCOPE

A case of radiodermatitis occurred on the dorsum of the right foot of a 56-year-old woman who had worked for 10 years in a shoe shop where a fluoroscope was used for shoe-fitting. It is presumed that only one foot was involved because of a defect in the lead shielding which allowed the operator to be exposed 10 or 15 minutes a day to a considerable dosage of x-radiation. It was also determined that there was abdominal exposure of about 1 r per minute in adults. In children this would have been much higher.—H. Kopp: *Brit. M. J.*, 2: 1344, 1957.

## SHORT COMMUNICATION

### CUBITAL TUNNEL COMPRESSION IN TARDY ULNAR PALSY

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OVER THE PAST TWO YEARS we have been prompted to reassess the anatomical factors involved in tardy ulnar palsy, because of the surgical findings in three patients who had no significant degree of distortion of the elbow joint or of the ulnar groove.

#### CLINICAL FINDINGS

In two patients there was a history of injury to the elbow but this had resulted in only a mild valgus deformity. The other patient gave no history of trauma. Otherwise, in all three patients the clinical picture was remarkably similar. They presented with the classical symptoms of coldness, numbness or tingling, followed by muscle weakness and wasting in the ulnar distribution. A prominent complaint was aching pain along the ulnar border of the forearm and hand. On palpation the nerve in the ulnar groove was swollen and insensitive. A significant sign was the sparing or minimal weakness of the flexor carpi ulnaris muscle, as contrasted with the marked loss of power and wasting in the remaining muscles supplied by the ulnar nerve. This distinction was also borne out by electrical studies.

#### OPERATIVE FINDINGS

The first two cases were accepted as classical examples of tardy ulnar palsy as described by Panas<sup>7</sup> in 1878. The nerve was exposed to carry out an anterior transportation in the usual manner in order to eliminate the friction and stretching which generally have been considered as the causative factors in the production of the paralysis.<sup>1,2</sup> As a first stage in this procedure, the aponeurosis joining the two heads of the flexor carpi ulnaris muscle was incised as it arches between the medial epicondyle and the olecranon. It was then noted that the nerve was constricted at the point where it dips beneath this aponeurotic arch and was swollen proximal to it. In one case, deep to the aponeurosis there was a fibrous membrane arching in the same direction which appeared also to be contributing to the constriction of the nerve.

In both cases, the nerve was freed of adhesions in the ulnar groove and this aponeurotic arch over the nerve was slit open. The nerve was not transposed. Nevertheless, prompt relief of pain with immediate improvement of numbness and motor

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power followed this procedure—in one patient, pain sensibility improved as soon as the brachial plexus anaesthetic block had worn off. In a third patient, treated in the same manner, the flexion deformity of the fourth and fifth fingers was no longer apparent three hours after operation. The first patient was operated upon in April 1956, and the others in October 1956 and January 1957. Since on repeated postoperative reviews they have shown continuing improvement with return of useful hand function, it now seems worth while to direct wider attention to this interesting problem.

#### THE CUBITAL TUNNEL

The focal constriction and retrograde oedema of the nerve, and the striking promptness of improvement following simple decompression of the nerve, have led us to the inescapable conclusion that an important factor in the causation of tardy ulnar palsy, and one which seems to have escaped previous analysis, is compression of the nerve just distal to the ulnar groove. At this point the nerve dips from a superficial to a deep submuscular course through a restricted opening. The roof of this opening is formed by the aponeurotic arch stretching between the medial epicondyle and the olecranon where the two heads of the flexor carpi ulnaris are attached. The floor is formed by the medial ligaments of the elbow joint. Because of the analogy in some respects to the nerve compression within the carpal tunnel, it has been proposed<sup>3</sup> that this opening be called the cubital tunnel.\*

#### THE EFFECTS OF THE CUBITAL TUNNEL

This tunnel offers an anatomical basis for some of the features of tardy ulnar palsy which have not been satisfactorily explained previously. These include the soft swelling of the nerve so commonly observed at operation and which is so distinct from the firm scar tissue of a true neuroma. We suggest that such constriction causes oedema of the nerve by interruption of the proximo-distal flow along the nerve or by compression of the longitudinally arranged blood vessels within the nerve.

Secondly, the frequent sparing of the flexor carpi ulnaris muscle may be related to the fact that this muscle, of all those supplied by the ulnar nerve, is the only one which has motor nerve branches separating off from the main nerve proximal to the tunnel. It seems probable that these branches, being smaller and lying somewhat more freely in the tunnel, are less subject to compression than the larger bulk of the main ulnar nerve. In our experience the sparing of this muscle is a distinctive sign of cubital funnel compression.

Thirdly, the well-recognized aggravation of symptoms by flexion of the elbow, which occurred in the cases reported here during milking, shovelling or hammering, can be attributed to narrowing of the cubital tunnel during such movement. Previously, it had been attributed to stretching and friction of the nerve in the presence of cubitus valgus. But, as in our cases, valgus deformity is absent or of minimal significance in many patients with tardy ulnar palsy. Moreover, in the cases noted here, recovery occurred without shortening the anatomical course of the nerve. Examination of the elbow by careful palpation and during exposure at operation indicates that during flexion of the limb several factors act to produce this narrowing of the cubital tunnel. Firstly, the roofing aponeurosis becomes taut as its point of attachment to the olecranon moves further forward and away from its fixed attachment to the medial epicondyle. Secondly, the floor of the tunnel is elevated because the medial ligament of the elbow joint bulges outward during flexion. This not only further narrows the tunnel but also contributes a third factor—an increase in the angle of dip to which the nerve is subjected as it enters the tunnel from its superficial course in the ulnar groove. All three factors act at a maximum when the limb is in flexion. This narrowing of the tunnel when the elbow is bent would also explain the "sleep paralysis" of the ulnar nerve when the limb is kept in prolonged flexion, without external pressure, as noted in three cases by Gowers.<sup>4</sup>

A finding observed in our first case was the presence of a connective tissue band crossing the nerve just distal to the ulnar groove and deep to the fibrous arch of the aponeurosis. It contributed to the nerve compression by enhancing the constricting effect of the cubital tunnel. A similar but less well developed band present in the third case did not appear to be adding much to the effect of the cubital tunnel. In other dissections of the elbow, we have noted that such bands may be well developed or absent, and we therefore do not consider their presence necessary to the development of cubital tunnel compression. There is no doubt, however, that such accessory bands, when present, must also be slit open with the roofing aponeurotic arch, or the nerve will be inadequately decompressed.

Since we reported these findings,<sup>3</sup> our attention has been directed to the abstract of an interesting preliminary communication by Osborne.<sup>5</sup> In this he reports that in exploring cases of tardy ulnar neuritis he had found in almost every case a band of fibrous tissue bridging the two heads of the flexor carpi ulnaris. He considered this band responsible for compression of the nerve. It is not clear whether this refers to the aponeurosis of the flexor carpi ulnaris, which is a constant and well-recognized anatomical structure\* and which in our

\*From Latin *cubitus* = elbow. *Cubital* was used by Horace in the sense of elbow cushion, suggesting that the Romans were not unaware of the hazard to the ulnar nerve presented by reclining banquets!

\*For example, Cunningham's *Manual of Practical Anatomy* (1935, p. 143) refers to this aponeurosis as a "fibrous arch between the heads of the flexor carpi ulnaris".

view forms the important roofing component of the cubital tunnel; or whether it refers to the deeper fibrous bands, noted previously by Woltman,<sup>6</sup> which are an accessory anatomical feature making in our cases a variable contribution to the nerve constriction. The description of tightening of the band with flexion of the limb applies equally well, of course, to either structure.

But both of these structures overlying the nerve are less meaningful if not considered in relation to the ligamentous floor of the tunnel which offers counter-pressure by bulging during flexion. Moreover, it may be noted that one of the patients reported by Panas<sup>7</sup> in 1878, and a considerable proportion of the patients in larger series of cases published since then, were described only as having arthritis with no history of trauma to the elbow. It is suggested that the puzzling progress of palsy in these cases can be explained by the scarring of the ligamentous joint tissue, thus producing thickening of the floor of the cubital tunnel with resultant nerve compression.

We consider it useful to call this particular type of tardy ulnar palsy the cubital tunnel syndrome. This term serves to indicate a focal constrictive lesion of the nerve (similar in some respects to the carpal tunnel syndrome) which tends to spare the flexor carpi ulnaris and which is relieved by simple decompression. This clinical picture is thereby distinguished from those cases of tardy ulnar palsy where paralysis of all the components of the nerve is associated with fracturing or gross distortion of the joint due to trauma. It is for this latter condition that the older term of traumatic ulnar neuritis (Platt<sup>8</sup>) might perhaps be reserved, and for which anterior transposition of the nerve may still be indicated. It appears probable that in many cases the successful result attributed to transposition may have been an unrecognized benefit of incidentally decompressing the cubital tunnel. If cubital tunnel decompression alone had been done, an equally satisfactory result may well have been produced.

The electromyographic findings in these cases were reported at the annual scientific meeting of the Canadian Association of Physical Medicine and Rehabilitation in Toronto on June 21, 1957, by our associate Dr. Talmage Hunt. Detailed case reports and a full discussion of the surgical findings are being published in the *Canadian Journal of Surgery*.

#### SUMMARY

In three patients, tardy ulnar nerve palsy was relieved simply by incising the aponeurotic arch overlying the nerve between the bony attachments to the olecranon and medial epicondyle of the two heads of the flexor carpi ulnaris. The nerve was seen to be constricted at this point and swollen proximal to it. There was prompt and continuing improvement after such decompression.

The term cubital tunnel is proposed for this opening through which the nerve passes from its superficial course to its deep submuscular plane just distal to the elbow. The roof of the tunnel is formed by the aponeurosis of the flexor carpi ulnaris and the floor by the medial ligament of the elbow joint. During flexion of the elbow, the tunnel is narrowed because of the tightening of the aponeurotic roof and the bulging of the ligamentous floor.

It is submitted that the cubital tunnel explains the constriction and retrograde swelling of the nerve, the aggravation of symptoms by flexion of the limb, and the sparing of the flexor carpi ulnaris muscle. These features, in the absence of gross distortion of the elbow joint, make up a typical picture which we feel may be termed the cubital tunnel syndrome.

It is suggested that the successful results obtained by anterior transposition of the ulnar nerve may have been due in many cases to the fact that a preliminary stage in this procedure incidentally involves opening the cubital tunnel and decompressing the nerve.

It is hoped that this record of our brief series of cases will stimulate interest in this problem and in the evaluation of the role of the cubital tunnel in ulnar nerve lesions.

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#### AORTIC COMMISSUROTOMY: A PHYSIOLOGICAL EVALUATION BY COMBINED HEART CATHETERIZATION

Data from combined left and right heart catheterization are presented by Smith *et al.* (*J. Thoracic Surg.*, 34: 815, 1957) on 14 patients with aortic stenosis, before and after surgery. The effect of aortic commissurotomy on the pathologic physiology of this lesion is described. The failure of the altered physiology to be restored completely to normal by aortic commissurotomy is pointed out and certain reasons for it are suggested. These are: (1) the inability of existing surgical techniques completely to restore the aortic valve to normal function, and (2) the secondary pathologic changes which have taken place in the myocardium of the left ventricle and atrium as a result of long-term obstruction. While aortic commissurotomy fails to restore the circulatory haemodynamics to normal in the majority of persons, the symptom triad—angina, syncope, and dyspnoea—is relieved in many cases. The rationale for this relief is discussed. Early surgical relief of aortic stenosis is suggested in order to avoid advanced secondary valvular deformation and irreversible myocardial damage.

It appears that with the recent developments of open heart surgery, direct vision technique not only may permit much more adequate commissurotomy, but offers hope that replacement of the valve will some day be possible in severely calcified cases.

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## DOCTOR, PATIENT AND STATE

A long-standing problem of civilization is the reconciliation of the interests of the individual with the interests of the community in which he lives. With the advent of improved communications—both in the sense of transportation and in the sense of improved dissemination of information—the word “state” has come to take the place of the word “community”. Medicine has been unavoidably drawn into this reorientation of the clash of interests, and an extreme example of this engagement is afforded by the practice of medicine in the Soviet Union. Mark Field, an American sociologist, in a recently published book “Doctor and Patient in Soviet Russia”<sup>\*</sup> provides us with a most valuable account of the impact of state intervention on the practice of medicine. The book is the product of wide reading, of personal experiences in the Soviet Union, and of interviews in Munich and New York with 1650 former Soviet citizens. He clearly demonstrates what happens when private enterprise in medicine disappears entirely and the state becomes master.

Dr. Fields sketches in the history of medical care in Russia and points out that the medical profession before the Revolution contained a large body of idealistic and politically active persons. Aware of the monstrous inequalities of the Tsarist régime, many physicians were active in working towards a change of the political system. Motivated by concern for the lack of medical care among the peasantry, many voluntarily exiled themselves in remote parts of Russia to serve as district doctors.

What happened when the Revolution came? The answer might be guessed. They had been nuisances before the Revolution and the new régime had no intention of letting them continue to be nuisances. The first step was to suppress the national medical organizations and to neutralize their effectiveness by forming a union of medical workers, which included all the grades of technician and assistant associated with medical care. The next step was to

infiltrate the medical profession itself with a hard core of party members, presently estimated at some 20% of the whole profession. As might be expected, party members tended to become supervisors and to attain the high places in the pyramid of centralized medical administration.

It is also recorded that there was an abortive attempt to infiltrate the medical schools with a high proportion of youngsters recruited from the lowest ranks of the proletariat; this seems to have failed, and the present student body would seem to reflect, as in the western world, a good cross-section of the population with emphasis on the middle class.

Dr. Field discusses the placement of newly graduated physicians, pointing out that there are three methods of ensuring an equitable distribution of physicians in any country: (1) by spontaneous placement, which does not seem to operate in the U.S.S.R. (the missionary spirit quickly evaporates in a totalitarian state); (2) by incentive placement, as in the West; (3) by forcible placement, which is common in the U.S.S.R. and leads to endless muddles and evasions, as clearly shown by Dr. Field.

The Soviet government assigns a comparatively low place in society to the physician; for example, salaries are very much lower for physicians than for engineers or architects, and in consequence the student intake to medical schools is of comparatively poor quality. This poor quality is associated not only with the low monetary rewards, but with innumerable frustrations such as lack of drugs and equipment, a fantastic amount of paper work (one physician had to do two hours' homework each night to keep up with his statistical returns), and above all the knowledge that to incur the displeasure of one's patients or administrative superiors may carry heavy penalties.

The clash of interests between the individual and the state is well brought out in a chapter on certification; the iron rigidity of the Soviet régime means that many seek refuge in medical certification to escape responsibilities. The doctor is however under constant counterpressure to resist demands for certification. For this reason he is often seen by the lower classes as a protector of the régime, whereas his more educated patients appreciate that he is under the same type of external pressure as applies to themselves. The intelligentsia are also more sympathetic towards the doctor because they tend to get better care, for there is a hierarchy in medical care in Russia, ranging from two-minute diagnoses for the worker to exclusive services of a personal physician at the top.

One extraordinary thing emerged from the interviews with displaced Soviet persons in New York. Despite the obviously higher quality of medical care available to them in the United States, only 18% of the sample preferred American medicine to the Soviet system, while 50% thought that the Soviet system was definitely superior. These answers were obtained in the face of pressures to

<sup>\*</sup>Doctor and Patient in Soviet Russia, Mark G. Field, Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1958. \$6.25.

say nice things about their new environment, and of definite hostility to their old environment. It would be interesting, as Dr. Field suggests, to hear the views of this sample in a few years' time after they have established themselves economically in their new homes. In the meanwhile we can only speculate on the reasons why a group of people would prefer a bureaucratic, authoritarian, low-quality system of medical care to one embodying the traditional freedoms of medicine.

### Editorial Comments

#### SERVO-CONTROL OF ANÆSTHESIA

It has been appreciated for some time that the influence of changing depth of anæsthesia on the electroencephalographic (E.E.G.) pattern could be utilized in the electronic control of anæsthesia.

Broadly speaking, the cortical potentials lessen as anæsthesia deepens, and a recorder sensitive to a selected frequency could be used to initiate an electrical impulse controlling either a positive pressure pump, in the case of intravenous agents, or a valve limiting the flow of a gas, in the case of an inhalation anæsthetic. The reaction time would be much less than that of the anæsthetist and the whole course of the anæsthetic would be smoother. However, several snags exist and many remain to be overcome: (a) Interference in the recording may result in the administration of further depressant; (b) the influence of  $PaO_2$  and  $PaCO_2$  on the E.E.G. would not receive consideration; (c) the method is, essentially, only appropriate to the most simple of anæsthetics, not involving the use of multiple agents as is often necessary—e.g. intravenous induction, maintenance with a combination of inhalation agent, intravenous analgesia and intravenous muscle relaxant. Thus, one has the situation where a most complicated piece of electronic equipment is of possible value in only the most simple of circumstances.

Nevertheless, although improvements on such devices may prove more universally applicable in the future, certain forms of investigative work may find servo-mechanisms of value today, e.g. where consistently steady levels of anæsthesia are mandatory and blood gas levels are being monitored.

In a recent article, Bellville and Attura<sup>1</sup> describe a mechanism which may be of interest to those investigatively minded. The E.E.G. output is fed into electronic networks which only pass frequencies close to either 24 cycles/sec. (ether anæsthesia) or 16 cycles/sec. (thiopentone and cyclopropane anæsthesia), according to which the operator selects. The authors stress the fact that additional control is given by a secondary feedback loop, from the anæsthetic dispenser to the E.E.G. output. In closing, they state that "The anæsthesiologist senses many variables and cor-

relates his observations with past experience and the requirements of the surgeon, in order to determine the anæsthetic requirements. The servo is limited in that it senses only one variable, the electroencephalogram."

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#### VIRAL HEPATITIS—AN ASSESSMENT

During World War II our concepts of infectious jaundice and its sequelæ underwent radical revision, by virtue of the huge numbers of cases available for study in military epidemics. During the latter part of the war and later, the association of cases of infectious jaundice with transfusion of blood or plasma, or with mass inoculation procedures, began to be recognized. It has thus become common practice to divide viral hepatitis into two groups—infectious hepatitis, caused by hypothetical virus A, transmitted orally and occurring either epidemically or sporadically; and serum hepatitis, caused by hypothetical virus B, transmitted parenterally, and commonly associated with the transfusion of contaminated blood or its products, or by the use of incompletely sterilized instruments. For practical purposes, the two forms of infection have been distinguished by their incubation periods—15-40 days in infectious hepatitis and 60-160 days for serum hepatitis. While some doubt has recently been cast on the validity of these criteria, it seems wiser to retain them, because as yet it has been impossible to develop specific serologic tests for either virus.<sup>1</sup> There is also no cross-immunity between the diseases caused by virus A and virus B. Despite numerous speculations to the contrary, therefore, one must conclude that there is, as yet, insufficient evidence to warrant accepting a unitarian concept that implies a single strain of hepatitis virus. It would thus appear that little progress has been made in the epidemiology of this disease since the end of World War II.

The clinical features of viral hepatitis, in both forms, are basically the result of widespread destruction of liver tissue and consequent impairment of hepatic function; if the infection is fulminating and the destruction sufficiently widespread, death will result. It is impossible, on clinical grounds alone, to distinguish between the two types of infection.

Despite the gaps in our knowledge outlined above, and even though necropsy study of this disease is limited by the paucity of fatal cases, we know a great deal about the pathologic anatomy of viral hepatitis, because of the increasing popularity of visceral needle biopsy during the past few years. This technique has made it possible to undertake extensive histological studies of liver tissue in non-fatal cases of this disease. In addition, it has, of course, been possible to carry out autopsy studies on fatal cases, whether acute, subacute or chronic.

The non-fatal forms are classified by Baggenstoss<sup>2</sup> as acute, persistent or recurrent. In all of these there is, in varying degree, degeneration, necrosis and disappearance of hepatic parenchymal cells. This apparently stimulates mononuclear cell increase, reticulo-endothelial proliferation, and the persistence of some liver cells in a hyalinized and eosinophilic state. These are similar to degenerated liver cells found in other hepatic lesions, and their appearance therefore is not pathognomonic of viral hepatitis. Finally, and very outstandingly, regenerative phenomena occur, which are of such varying degree that they may in great part affect the outcome of a given case not originally classed as fulminant. Such regeneration occurs as a result of both mitotic and amitotic cell division and is characterized by the presence of large numbers of multinucleated cells. The combination of individual cell necrosis, focal necrosis, increase of mononuclear and reticulo-endothelial cells, regenerative phenomena and inflammation of the portal zones, is typical of viral hepatitis. Microscopically, there is little to distinguish the acute from the persistent or recurring form of the disease, and the distinction is usually made purely on clinical grounds.

As might be expected, the pathologic anatomy of the fulminant form varies only in degree, though widely, from the acute form. In this rapidly fatal disease, histologically almost all hepatic cells are seen to have been destroyed and there is extensive inflammatory reaction, with little or no regenerative activity. A liver which has been so extensively destroyed will not, of course, support life.

Finally we come to the situation in which the hepatic damage is so extensive that, although death does not take place, complete restoration of pre-existing structure is impossible. Variable amounts of parenchymal regeneration take place, but since regeneration under these conditions is so extensive, it is usually nodular rather than intralobular. This alters the normal vascular arrangement, with severe compression and distortion of small veins and capillaries, interference with portal and hepatic venous flow, and resulting portal hypertension. This is the histologic state of affairs in the so-called "post-hepatic" or "post-necrotic" cirrhosis.<sup>3</sup>

From a purely clinical point of view, it is impossible to prognosticate whether, in a given patient, viral hepatitis will completely subside without sequelæ or will go on to terminate in post-necrotic cirrhosis. Apart from some suggestion that coexistent nutritional deficiencies, alcoholism, or other potential hepatotoxic factors such as too early ambulation, may weight matters in the direction of post-hepatic cirrhosis, the factors which determine whether cirrhosis will or will not occur are at present totally unknown. Fortunately, the incidence of cirrhosis is low, and, although authorities still differ on this point, it is encouraging to reflect that not all patients with hepatic cirrhosis are alcoholics.

S. J. SHANE

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#### CONTROLLED HYPOTENSION IN ANÆSTHESIA

Reduction of bleeding at operation has long interested the surgical team, and the tourniquet, adrenaline infiltration, and electrocautery and regional anæsthesia are firmly established means of achieving this.

However, the discovery that pentamethonium was relatively ineffective in its intended role as a decamethonium antagonist,<sup>1</sup> and that it consistently produced hypotension, led Scurr to suggest its use to produce the bloodless field.<sup>2</sup> In this way, a new field of investigation and endeavour was opened to the anæsthetist. Since then, new ganglionic blocking agents have been introduced,<sup>3-5</sup> and sufficient time has elapsed to consider the place of this technique.

All are agreed that a place exists, under special circumstances, and there is general agreement that in using this technique the safety margin of most surgical procedures is reduced. It still remains for anæsthetists and surgeons to agree as to when this reduction of the safety margin is justified by the special circumstances of the case. It is probable that in major plastic surgery the technique is most frequently justifiable, and it is appropriate, therefore, that one of the earliest exponents of the use of ganglionic blocking agents, Dr. Hale Enderby, should be from a major British plastic unit. In a symposium on anæsthesia in the *British Medical Bulletin* (a journal put out by the British Council) he writes on the advantages of controlled hypotension—stressing the importance of posture, controlled respiration and carbon dioxide removal in his technique. In the same issue, Dr. Armstrong Davidson writes on the disadvantages of controlled hypotension, naming as absolute contraindications hypertension, and renal, hepatic and cardiac disease—other than acute left ventricular failure. Many will not be in complete agreement with this dogmatism, but certainly since the publication of a comprehensive survey of 27,930 cases by Little,<sup>7</sup> the disadvantages of controlled hypotension have been well recognized and the possibility of myocardial and cerebral ischæmia—and of thrombosis in the vessels supplying these and other vital organs—has rendered the average anæsthetist rightly wary.

Notice should be taken, however, of the fact that at least three major centres in the British Isles (East Grinstead, Edinburgh and Westminster), each of which was among the first in the field and has vast experience of controlled hypotension, continue to use this adjunct on many occasions. Whether or not this continued confidence is merely an index of their immaculate routine anæsthesia (and consequent absence of factors further reducing the safety margin)—or of the virtues of controlled hypotension itself—is a matter for discussion.

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# PERTHANE, THE ADRENAL CORTEX, AND CANCER

Perthane (2:2-bis-para-ethylphenyl-1:1-dichlorethane) is an insecticide structurally related to the insecticides DDD and DDT. In 1949 it was reported that DDD, administered orally in corn oil, produced adrenocortical atrophy in dogs. Subsequently, when DDD was given in amounts up to 5 g. daily to patients with carcinoma of the breast or prostate, clinical improvement occurred in one patient who had carcinoma of the breast with axillary metastases, and exacerbations were noted when the drug was stopped.

Perthane, the diethyl derivative of DDD, also causes adrenocortical atrophy in the dog; and Taliaferro and Leone (*New England J. Med.*, 257: 855, 1957) now describe its effects on adrenocortical function in human subjects. Fourteen patients, nine with carcinoma of the breast and five with carcinoma of the prostate, all with metastases, were treated with Perthane. Pathological diagnosis was established in every case. The drug was given orally as a 20% solution in corn oil, as an aqueous suspension or in enteric-coated capsules.

Several objective tests for adrenocortical function were carried out, but the only determination of any value was that of the plasma 17-hydroxycorticosteroids after ACTH administration. When doses of 150-300 mg. per kg. per day were administered, definite depression of plasma 17-hydroxycorticosteroid levels was observed. This occurred both when the levels were measured as a response to intermittently administered ACTH, and when ACTH gel was used to produce continuous adrenocortical stimulation. The depression of the plasma 17-hydroxycorticosteroid levels was marked, but these values did not fall below the normal range.

When Perthane was given in smaller doses to patients not receiving ACTH, no consistent effect on the plasma 17-hydroxycorticosteroid level was noted. While the results of this study are not clear-cut, they suggest the direction that future research in malignant disease will take. Previous work has suggested that such compounds as these will suppress adrenal cortical function while producing adrenal cortical atrophy; and another chemical, amphenone, is known to produce adrenocortical hypertrophy while such suppression is being brought about. The latter situation is, of course, analogous to that which obtains in the thyroid gland exposed to antithyroid agents.

Thus, having produced remissions of respectable degree and duration by ablation, we now seek chemical agents that will predictably suppress adrenocortical function, and thus produce a medical adrenalectomy. Although Perthane and related compounds are far from ideal agents for this purpose, they represent an interesting point of departure for future research not only in the study of breast and prostate malignancy, but also by analogy in the chemotherapy of cancer in general.

# ASPIRIN—A "NEW" DRUG FOR THE ORAL TREATMENT OF DIABETES?

While extended therapeutic trials of the sulfonylureas as oral antidiabetic agents have been proceeding, and while the search for new related compounds has been pressed, we have, it appears, remained blissfully unconscious of the availability of a familiar and innocuous drug, in common daily use, which is capable of correcting hyperglycaemia, glycosuria and ketosis and causing the disappearance of the common associated symptoms of thirst, polyuria and pruritus. This drug is aspirin, which has for the past ten years been known as an antidiabetic agent, and which has been studied by investigators from an M.R.C. Research Unit in Glasgow.<sup>1</sup>

Although, at first glance, one would be inclined to expect at least one strikingly obvious feature that would render the entire question academic, try as one may, one can find little to suggest that aspirin cannot become a valuable antidiabetic agent. Specifically: (1) it lowers the blood sugar, rendering diabetic glucose tolerance curves normal; (2) it is capable of keeping the fasting blood sugar normal for extended periods of time; (3) it causes a striking diminution of urinary glucose in mild and severe diabetics; (4) it causes ketonuria to disappear; (5) it acts as a "metabolic stimulant", aiding in the utilization of glucose by the tissues.

It is true that the doses of aspirin used in the Glasgow study were high and specifically designed to produce high serum salicylate levels. Under these circumstances, there was evidence of salicylate overdose, such as tinnitus and impairment of auditory acuity—and, when extremely large doses were given, nausea and intermittent vomiting occurred. It seems quite clear that the doses resulting in nausea and vomiting were much larger than those required to control hyperglycaemia and glycosuria. From previous experience, it is also to be expected that the more minor symptoms, tinnitus and dulling of hearing, would tend to become less troublesome as time goes on.

Even if this were not the case, it is probably not too much to expect that an intensive search for chemically similar compounds might result in the discovery or isolation of an aspirin-like preparation with less marked toxic propensities but still retaining its antidiabetic effect. Stranger news than this by far has issued from chemical laboratories.

While it would be premature to suggest that aspirin should at this time be given a place in the treatment of this disease, it would most certainly seem advisable that some of the energy now being channelled in the direction of the investigation of the sulfonylureas be diverted to the further study of the effect of aspirin—or one of its present or future chemical analogues—and the control of diabetes mellitus.

S.J.S.

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## Medical News in brief

### MINOR PSYCHIATRIC PROBLEMS IN GENERAL PRACTICE

The mental ill health encountered by the family physician in his practice is now receiving more attention than ever. That all these patients cannot be referred to certified psychiatrists, or be treated by the general practitioner himself for lack of time or proper qualifications, renders the problem all the more complicated. Buttsworth and White of Perth (*M. J. Australia*, 2: 788, 1957) have recently suggested the employment of a clinical psychologist in general practice. Many forms of maladjustment encountered in such practice could be best handled with his aid. "Fears have been expressed that organic disease may be overlooked when non-medically qualified persons are involved in patient management. Provided close liaison is maintained between psychologist and doctor, we have found this attitude unrealistic. It is possible for errors to occur despite most stringent precautions — this unhappy event may occur at any level of practice. However, far too frequently the opposite obtains—the psychosomatic sufferer is subjected to repeated surgical assault while his original symptomatology becomes more deeply and permanently embedded in his personality." Among the criteria used for selection of patients in referring them to a psychologist are: absence of causative organic disease, recent onset of symptoms, proper motivation to get well on the part of the patient, personality and intellectual make-up suitable for counselling and absence of psychosis. The psychologist may contribute also in administering tests of personality structure and intellectual capacity. With specialized training and more time to devote to counselling, the psychologist may offer valuable assistance in helping maladjusted patients in general practice.

### EXTERNAL EAR EXAMINATION IN THE NEWBORN

In their search for an accurate and complete description of the appearance of the normal external ear canal and drum of the newborn, McLellan and Webb (*J. Pediat.*, 51: 672, 1957) realized that none existed in the American paediatric literature. In order to set their own standards, they examined 204 ears of normal babies in their first 24 hours of life. It soon became obvious that a white or greyish semi-solid creamy material obstructed visibility in every case. This substance was thought to be vernix caseosa. Several commonly accepted solvents (including tap water) were tried in an attempt to clean out the canals and it was found that the instillation of ether with a dropper was the most effective and satisfactory way of eliminating the obstruction. Although the process was time-consuming, the authors succeeded in cleaning both ear canals with 4 ml. of ether. (This procedure did not seem to produce any caloric stimulation of the vestibular nerve or other ill effect.) Whereas before, the colour of the drum could only be suspected in less than half of the babies, and not seen at all in the others, it was clearly seen after cleansing in all but one. The short process of the malleus was first seen, and in most cases the drum appeared retracted or medially displaced. The long

process of the malleus was occasionally well seen and so were the ossicles, a few times, through the membrane. The flaccida was either red or pink and appeared thickened and opaque. In the words of the authors, "The cone of light, when present, was small, irregular, and indistinct, and never [displayed] the glossy cone-shaped light reflex on a translucent tensa seen characteristically in the healthy older infant, child and adult." They conclude that by adult standards all drums appeared abnormal.

### THE PROGNOSIS OF BENIGN GASTRIC ULCER

The prognosis of gastric ulceration is variable. Much time and money could be saved if some degree of accuracy could be reached in determining which type of patient is exposed to a high morbidity from recurrences. In an analysis of case histories and an evaluation of progress of 135 patients over a few years, members of the School of Medicine, Western Reserve University, Cleveland, Ohio, have determined six factors which show a statistically significant relationship to a poor prognosis in this condition (H. J. Dworken *et al.*, *Gastroenterology*, 33: 880, 1957).

A history of previous hospitalization for ulcer or one of continuous symptoms for a year or more denotes the presence of a persistent lesion which may be refractory to treatment. Back pain associated with epigastric pain is also related to prolonged and severe symptoms. Failure of symptoms to disappear during the first week of intensive medical treatment forecasts a long illness. A level of gastric acidity above 60 clinical units after histamine, and the previous perforation of an ulcer, were both related more to the performance of surgery in the group concerned than to the duration or severity of symptoms.

"No significant relationship was demonstrable in this series between subsequent severity of symptoms, subsequent duration of symptoms, or need for surgery, with any of the following factors: length of history of ulcer, age at onset of ulcer symptoms, consumption of alcohol, use of tobacco, regular receipt of a veteran's pension, location of the gastric ulcer, or associated duodenal deformity or duodenal ulcer."

### INTERNATIONAL STUDY OF NURSING

The International Labour Organization announces that it is beginning a study of the general conditions of work and employment of nurses. This is the first time that an international study of the problem has been made, and it will include consideration of all aspects of employment and working conditions. It will cover contracts of employment, methods of collective bargaining, hours of work, holidays with pay, salaries, problems of transfer and promotion, health protection, and social security. It will also deal with questions of recruitment, vocational training and placement services, and the economic and social status of nurses. The results of the study will be used as a working paper for a meeting of an Expert Committee to be held later this year in Geneva.

(Continued on advertising page 58)

## Special Article

### WHY HAS THE CANADIAN MEDICAL ASSOCIATION A PUBLIC RELATIONS PROGRAM?

GORDON A. SINCLAIR, M.D.,<sup>2</sup> Toronto

IN THE JANUARY 15 issue of the *Canadian Medical Association Journal*, a special article appeared under the caption of "Doctor-Patient Relationship or Doctor-Public Relationship" by Dr. Harry Baker of Vancouver. Some of the thoughts expressed by Dr. Baker are indeed worthy of serious consideration. In several instances, however, the author has strongly objected to the C.M.A.'s public relations program in its present form, and asserted that it will tend to distort the public's viewpoint of the Canadian doctor. The essence of Dr. Baker's comments is taken from an extract from his own article:

"Does the medical profession need any special voice to speak for it? We, everyone of us, speak for ourselves every day in our daily work. Everyday we give ourselves in service to the public."

In the year 1867, when the Canadian Medical Association was first established, the founders set down objectives for the benefit of the profession as a whole. They were stated as follows:

1. To give frequent, united and decided expression of the medical opinion of our country.
2. To advance medical knowledge.
3. To elevate the standards of medical education.
4. To direct and control public opinion in regard to the duties and responsibilities of medical men.
5. To excite emulation as well as harmony in the profession.
6. To facilitate and foster friendly intercourse among its members.

If presented as a basis for a public relations program today, the ideals represented by the above would typify the highest standards to be attained. For the moment, let us concentrate on the true meaning of the contemporary phrase "PR"—what it implies—and what the Canadian Medical Association has done about it.

Although the principle of PR has been in effect for hundreds of years, it is only within the last three or four decades that this phase of endeavour has used the modern terminology "PR". This was evidently brought about by the extensive use of mass media, with its variety and scope of communication.

Today, in order to put into action the C.M.A. objectives as planned in 1867, all modern techniques and lines of communications must be used. This does not mean that the basic principles of good-will have changed over the years; it simply implies that the method of getting our message across has altered. As a result, personnel doing this type of work are specially and thoroughly trained in this new profession called Public Relations.

The original objectives of the Association imply this definition, and the "PR" job is to use all the different types of communication in presenting the collective viewpoint of the profession. What has the C.M.A. done about it? During the past year, our activities have embraced the medical profession and many important segments of the public who have assisted the Association in the dissemination of medical news. Here are a few of the many projects that have been completed:

A Medical-Press Code of co-operation was established to strengthen relations between doctors and all news media.

An informative booklet was distributed to acquaint doctors with data on available post-graduate medical awards. Other booklets, displays, and plaques feature suggestions in improving doctor-patient relations.

Through the co-operation of the Bell Telephone Company of Canada, arrangements have been made for an emergency medical call listing to appear in the telephone directories of this company—if requested by the local medical society concerned.

Liaison with news media outlets is a continuous project. All channels of communication are, more than ever, accepting the Association as a repository of authoritative medical information, and a source of guidance in the preparation of news stories.

Annual Meeting promotion—Press, radio and TV have been most co-operative in conveying to the general public information on the advancement of medicine in Canada.

In addition to the above, articles under the caption of "Public Relations Forum" have appeared periodically in the *Canadian Medical Association Journal*. These articles have been prepared with only one thought in mind, namely, to inform the doctor that PR aids are available for his use—and to remind him of known methods to create good patient-doctor relations. In the main, the criticism in Dr. Baker's article centred on this series of articles. No doubt at times, some of the thoughts expressed have not been accepted by all readers. This is to be expected. It is quite apparent that there are some people who associate a medical public relations program with that of advertising, or high-pressured publicity. Nothing could be further from the truth. Then too, there is no doubt that this same group are confused between good public relations and the promotional methods frequently used by those who oppose ethical medical practice. We are not in competition with this latter form of publicity. Our public relations responsibility is to interpret intelligently the viewpoint of orthodox medicine in Canada. It is our conviction, however, that the application of our entire public relations program, including the articles, is in keeping with the high standards set before us. It is directed and approved by doctors who are members of the Standing Committee on Public Relations. All divisions of the C.M.A. also have similar committees—and with the same purpose in mind.

<sup>2</sup>Chairman, Committee on Public Relations, Canadian Medical Association; Assistant Medical Director, Imperial Oil Ltd., Toronto.

The Public Relations Committees of this Association are very conscious of their responsibility on behalf of the medical profession in Canada. They are also aware of changing conditions in every phase of human endeavour, and try to adopt a realistic attitude in this regard. These energetic and enthusiastic Public Relations Committees—from coast to coast—are working on your behalf, and with no thought other than to enhance the reputation of our profession. They know that errors in judgment will be made—but above all, they will sincerely try to fulfil the high objectives provided for us some ninety years ago. The importance of the individual doctor's relationship to his patient is unquestioned. We have, however, a collective responsibility to present the profession's actions and views in a light which will enhance our reputation in the eyes of our fellow citizens. This our public relations program is attempting to do.

## MEDICAL FILMS

CONTINUING the listing of available films on medical and related subjects, we list below additional films. These films are held in the National Medical and Biological Film Library and are distributed by the Canadian Film Institute, 142 Sparks Street, Ottawa, Ontario. The evaluations have been prepared by Canadian specialists in the subjects of the films, under the Medical Committee of the Scientific Division of the Canadian Film Institute, which is headed by Dr. G. H. Ettinger.

### ANATOMY

**The Embryology of the Eye (1950) Sound, Colour, 41 minutes.**

Produced by Sturgis-Grant Productions Inc., for the American Academy of Ophthalmology and Otolaryngology. Technical Advisers: George W. Corner, M.D., Carnegie Institution of Washington, and George K. Smelser, Ph.D., Columbia University.

**Description.**—An instructional film, illustrating the embryological development of the eye and accessory organs in man. Schematic animation shows two types of activity in the development of the human embryo: growth, and directional change in structure, shape and function of cells. Early development of eye in the embryo from 17 days to 36 days. Later development of specific parts of the eye: lens, retina; optic nerve and vitreous; anterior regions and orbit; vascular system; facial region, including eyelids. Simultaneous development of all parts of the eye during each month of growth, correlating the detail of development shown in preceding sequences. Animation, models and photomicrographs used throughout.

**Appraisal (1951).**—An excellent film of high technical quality. It is a highly specialized subject, probably too extensive for a general course in human embryology, but eminently suitable for graduate students and specialists in ophthalmology. *Unsuitable for non-medical audiences.*

**Availability.**—National Medical and Biological Film Library (\$8.00). Purchase from American Academy of Ophthalmology and Otolaryngology, 100 First Avenue Building, Rochester, Minnesota.

**Globules du Sang Humain et Phagocytose (in Vitro) (193-) Silent, B & W, 16 minutes.**

Produced at the Pasteur Institute.

**Description.**—This silent film with French subtitles demonstrates the amoeboid activity of human white blood

cells, and some aspects of their phagocytic action. Opening sequences show the appearance and activity of eosinophils and lymphocytes *in vitro*, by ordinary and dark-field microscopy and at normal and time-lapse speeds. Phagocytosis is then shown of two masses of microbes, one of streptococci and one of diphtheria bacilli (dark-field microscopy). Phagocytosis of diphtheria bacilli is then demonstrated by ordinary high-power microscopy. Finally, phagocytosis of anthrax bacilli in the blood of a vaccinated individual is shown.

**Appraisal (1956).**—A very good film when one considers its age and the fact that, today, phase contrast microscopy can show much more. It should also be borne in mind that the phagocytic reaction shown in the case of anthrax bacilli is representative of a protected individual. The film is recommended for medical students in the clinical years and is suitable for other interested medical and scientific audiences.

**Availability.**—National Medical and Biological Film Library (\$1.00). For purchase apply to the Pasteur Institute, Paris, France.

**In the Beginning (1938) Sound, B & W, 16 minutes**

Produced by the United States Department of Agriculture.

**Description.**—An instructional film, illustrating the mechanism of reproduction in mammals. Reproduction in mammals is described in the case of the rabbit, employing diagrams, dissection, ciné-photomicrography, time-lapse and animation. Ovulation, fertilization and cell division are shown. (Note: The same material is available in a one-reel, ten-minute version, under the title: *How Animal Life Begins.*)

**Appraisal (1946).**—A clearly presented film, although not too well treated in that there is too great a spread between the excessively simple and the great detail. Animations and photomicrography are good. Sweet music, patriotic flag saluting, and sentimental pictures of puppies, colts and a baby are quite unnecessary. The film is suitable for high school and general scientific audiences.

**Availability.**—National Medical and Biological Film Library (\$1.50). Purchase from United World Films Inc., 1445 Park Avenue, New York 29, N.Y.

**Knowlesi Malaria in Monkeys (1940-42) Silent, Colour, 63 minutes.**

Produced by the University of Tennessee Medical School, from research carried out by Melvin H. Knisley, Assistant Professor of Anatomy, University of Chicago, and Warren K. Statman-Thomas, Assistant Professor of Preventive Medicine, University of Tennessee; *et al.*

**Description.**—This record film (often referred to as the "Blood Sludge Film") demonstrates the pathological circulatory physiology of Rhesus monkeys during acute *Plasmodium knowlesi* malaria. Begins with a short explanation of the method of filming circulation changes, and then contrasts the normal features of blood flow with advanced pathological changes as seen microscopically in the omentum of the anesthetized animal; physiological effects on surrounding tissues are pointed out. Course of the disease in untreated animals is traced from an early stage; description of precipitates which form in the blood to cause "sludging"; resulting pathological changes are seen occurring. Rapid reversal effect on these processes produced by atabrine.

**Appraisal (1948).**—A very clear and interesting film which should find a place in the teaching program in departments of pathology and medicine. Has general medical interest because of the techniques shown and the fact that the processes demonstrated, or ones very similar to them, occur in many conditions besides malaria. Suitable for all interested medical and scientific audiences; inappropriate for other groups.

**Availability.**—National Medical and Biological Film Library (\$8.00). For purchase apply to Dr. T. S. Eliot, University of Tennessee, 874 Union Avenue, Memphis, Tenn.

(To be continued)

## GENERAL PRACTICE

### MANAGEMENT OF PRURITUS ANI\*

A. K. ROY, M.D., *Regina*

PRURITUS ANI is a complaint which has afflicted man throughout the ages. It is often considered a minor ailment, especially by those not afflicted with it. It is, at the least, a source of annoyance and embarrassment, and, at the worst, it may become so distracting as to lead to suicide. The perianal area is richly endowed with sensory nerve endings, and as a result, the sensation of itching may be very easily initiated. Almost all persons have occasional itching of this area. "It is usually transitory and mild and requires no treatment except perhaps talcum powder. It may, however, become a chronic intermittent symptom punctuated by frequent episodes of intense, maddening pruritus that drive the patient into a frenzy."<sup>1</sup> The itching is usually worse at night and leads to uninhibited and unrestrained scratching, especially in bed at night, and becomes almost a spinal reflex. The scratching may continue even during sleep or may be violent enough to wake the patient and prevent sleeping. Life becomes a misery. Work often suffers and, as the patient states, "his nerves are shot".<sup>2</sup>

#### PATHOGENESIS

Pruritus ani may occur at any age from childhood to old age. It is more common in the thirties and forties. Men are more commonly afflicted than women.

Pruritus ani is a symptom. The first principle in the management is to determine the cause, and then treat it specifically wherever possible. An adequate history is of course mandatory, particularly with reference to cutaneous disease. Such conditions as psoriasis and lichen planus often affect the perianal skin. What drugs has the patient been ingesting? Broad-spectrum antibiotics often initiate a pruritus ani. What local therapeutic agents have been used? A minor itching is often blasted into an explosive eruption by improper applications. Is there a history, or signs or symptoms of diabetes? Have there been any gastrointestinal disturbances? Any diarrhoea? Look for the cause, not the effect.

With regard to physical findings, the patient is very often an obese individual with an oily skin, who perspires excessively and whose hygiene is poor. The topography of the perianal area is an important factor. It is often noted that the patient has a deep, funnel-shaped perirectal region. In these cases usually we see a simple intertrigo consisting of a smooth glazed erythema. In chronic cases however the skin may become soggy, redundant, macerated and lichenified because of the effects of scratching over a period of months or years. In other cases there may be no apparent physical change—beware of these cases for these, although rare, are the most resistant to therapy, perhaps because the cause may be a deep-seated psychogenic one.

Specific skin eruptions, as I have already stated, may involve this region, but usually present typical lesions elsewhere. Psoriatic involvement of the perianal area does not show the typical squamous scaling seen in involvement of the glabrous skin. There is usually a well-demarcated, infiltrated salmon-pink plaque, oftentimes in the superior portion of the intergluteal cleft, but occasionally involving the whole perianal and genital region.

#### CAUSES

1. Poor hygiene. This is, in the opinion of most dermatologists, the most common causative or contributing factor. Few people cleanse the anal region adequately after defaecation. In some Eastern countries this condition is almost nonexistent, and is believed to be due to the fact that in these countries the people do not use toilet tissue, but wash the area after every bowel movement.

2. Biological causes. Pinworms in children are a common cause and even in adults are the cause in an occasional case. Examine for ova or worms in all cases of pruritus ani in children where the cause has not already been found. Pediculosis and scabies must be kept in mind.

3. Fungous diseases such as moniliasis and occasionally tinea cruris may be incriminated. A pruritus ani of monilial origin usually shows a smooth, beefy red erythema with epithelial undermining at the periphery. A bacterial folliculitis may on occasion be the initiating cause.

4. Cutaneous disease. The two most common are seborrhoeic dermatitis and psoriasis. Remember—look elsewhere for cutaneous lesions. Do not take the patient's word for it. Oftentimes when I look at a patient's scalp after he has told me that he has an itchy rectum, he will say, "But Doc, it's my bottom that itches, not my top."

5. Contact dermatitis. This is frequently seen. The patient usually shows a typical dermatitis with oedema, erythema, vesiculation and crusting. The most common malefactors are topical anaesthetic ointments, topical antihistamines and the topical antibiotic ointments, chiefly penicillin and the sulfonamides. Anything that may come in contact with this region is suspect, such as clothing, toilet tissue, cosmetics, suppositories and, rarely, food. I have seen several poor unfortunates who have had the misfortune to use poison ivy leaves to clean the area after defaecation while on a picnic or while hunting. Pruritus ani with or without a monilial-like eruption, until recently, was an increasingly frequent consequence of antibiotic therapy. Since the advent of nystatin (Mycostatin), there has been, in my estimation, a slight reduction in the number of such cases.

6. Constipation or diarrhoea are oft-mentioned but relatively rare causes.

7. Pathologic conditions of the rectum and anus such as fissures, sinuses and cryptitis may be the precipitating factor.

8. Psychogenic causes. Some authors consider psychogenic factors the basic cause in as many as 80% of cases of pruritus ani. Others do not even mention such a possibility. A purely psychogenic pruritus ani is rare. A psychoneurotic person is more prone to develop pruritus ani in the presence

\*Presented at the First Scientific Convention of the Saskatchewan Chapter of the College of General Practice of Canada, Regina, April 27, 1957.

of one of the above causes, and often reacts in an extreme manner. The tension may be, however, the result of months or years of severe pruritus. Macalpine<sup>3</sup> in a psychiatric study stated that pruritus ani was a result of "cloacal" fantasies reviewed in their original primitive mode as body sensations rather than ideas, the symptoms thus representing the fantasies.

There is no doubt that some patients do show an abnormal interest in their "itch". This person shows a characteristic "eagerness to submit to local inspection. He will almost pull himself asunder to give a good view of the seat of the trouble".<sup>4</sup> In other patients there is a strong sense of shame and reluctance to expose themselves for examination.

It would appear that after a time pruritus ani may become self-perpetuating whether the initial cause is present or not. I believe this accounts to a considerable extent for the large group of cases where no cause can be found.

#### THERAPY

Treatment must be individualized. Consideration must be given to the condition of the skin, to the cause, and to the state of mind of the patient. Often it is necessary to treat a superimposed dermatitis from already over-enthusiastic treatment before going on to treat the pruritus and its cause.

#### SPECIFIC THERAPY

Only a few words are necessary here, for I am sure you are familiar with the therapy indicated when a specific cause is apparent.

For a pruritus due to pediculosis pubis 5% DDT powder is still effective. Eurax ointment may be used for the pruritus. For scabies use benzyl benzoate emulsion or even 10% sulfur ointment. I need not stress at this time that the whole body from ehin to toe should be treated. Eurax is an excellent scabicide and antipruritic. For pinworms use a piperazine derivative. In itching due to bacterial infections, local applications of "safe" agents may be tried. The topical use of antibiotics which are used orally or parenterally is deplored. Use neomycin in a lotion or cream or bacitracin, never penicillin, the sulfonamides or broad-spectrum antibiotics. The halogenated hydroxyquinolines such as Sterosan or Vioform are of value.

In tinea cruris use potassium permanganate sitz baths—shake lotions with 6% precipitated sulfur or 4% resorcin during the day and the fatty acid ointments at night.

Vioform powder 2 to 3% in a shake lotion or Mycostatin, three 500,000 unit tablets in 2 ounces of shake lotion, is of value in a monilial eruption.

In psoriasis of this area, hydrocortisone cream has been found to be of great value. Hydrocortisone is useless as a topical application for psoriatic involvement of the skin elsewhere on the body.

#### NON-SPECIFIC THERAPY

In a large percentage of cases, treatment must be begun before the cause is known, and unfor-

tunately in many cases the cause is never found. The patient should be told that the object of therapy is the relief of the itching and to help break the scratching habit.

1. Proper hygiene is of great value both in prevention and therapy. Except in the most acute cases, i.e., where there is an acute dermatitis or marked erythema, the patient is given a mild soap and advised to wash the area, using the soap and lukewarm water three or four times daily as well as after each bowel movement. I have found the hexachlorophene soaps such as Gamophen Soap or Phisohex to be of value here. The use of toilet tissue is forbidden. Keep the area clean and dry.

2. The patient is advised to wear loose clothing and cotton underclothing. The use of cosmetics is kept to a minimum.

3. If there is an acute dermatitis or much erythema or maceration, potassium permanganate sitz baths in a dilution of 1:15,000 for 20 to 30 minutes three times a day are advised. Compresses of potassium permanganate, normal saline, or a 1:16 dilution of liq. aluminii acetatis may be used for one hour three or four times a day.

4. Use simple bland applications such as 0.5% menthol and 0.5-1% phenol in simple calamine lotion between sitz baths and at night. A cream such as Dermabase or Unibase with 0.5% menthol and 0.5-1% phenol may be used. To either of the above applications, you may add 2-3% Vioform. Avoid the use of applications with relatively high sensitizing indices, such as topical anaesthetics or antihistamines.

5. The introduction of hydrocortisone ointment has given us an invaluable addition to our therapeutic armamentarium in pruritus ani. They are many reports<sup>5,6</sup> in the literature of rapid and sustained improvement in even severe intractable cases.

Turell<sup>6</sup> believes that hydrocortisone in either the acetate or free alcohol form is a very valuable agent in the symptomatic relief of pruritus ani. Its use must be accompanied by attempts to elicit and eliminate the underlying cause. The continued application of any medicament by the patient to the anogenital area which is an erogenous zone carries the often unrecognized risk of perpetuating, or even increasing, the severity of the eruption.

Turell<sup>6</sup> has found hydrocortisone to be of little value where there are no cutaneous changes; again if the itching is secondary to diarrhoea or antibiotic therapy, if the itching is accompanied by anal fissure, fistula or prolapsing piles and also in severe itching caused by pediculosis pubis or leukæmia.

I have found hydrocortisone acetate or free alcohol in a water washable base or lotion base to be superior to the ointment base. I often use hydrocortisone free alcohol in combination with the halogenated hydroxyquinolines (Vioform or Sterosan) and find this very effective. It should be applied in a thin film at least three times a day. When the itching has been absent for several weeks, then the patient may be gradually "weaned" from the application.

Parenteral corticosteroids may be used temporarily, in very acute cases, to suppress intolerable subjective symptoms.

6. Sedatives are, of course, of great value and are used primarily in tense, nervous patients. I have found tranquillizing agents to be of help.

7. Superficial x-ray therapy is of great value as a palliative treatment, but has been used less frequently since the advent of hydrocortisone, as both have much the same effect, i.e., of suppressing inflammation and reducing pruritus.

8. Surgical treatment is occasionally needed to correct lesions that may be the cause of the pruritus such as fissures and fistulas.

9. Psychotherapy has a place in the treatment of pruritus and where there is a definite psychogenic background, but in most cases it is sufficient to tell the patient that his "nerves" are usually the result of the itching and that the lichenification is caused by his "nails" and not by his nerves.

#### SUMMARY

Keep the area clean and dry, use simple applications, search for the cause and your patients will not be "itching to see you".

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Medical Arts Clinic,  
2125-11th Avenue.

### THE GENERAL PRACTITIONER IN LARGE CANADIAN HOSPITALS

[The information given below about departments of general practice in hospitals in three Canadian cities has been collected by the College of General Practice and appears also in the College Bulletin.]

#### UNIVERSITY HOSPITAL—SASKATOON



EIGHTEEN GENERAL PHYSICIANS are members of the active staff at the University Hospital, Saskatoon, and another eight are associate members. The University Hospital's Department of General Practice assumes administrative responsibilities

but does not do clinical work.

The by-laws of Saskatoon's teaching hospital provide that "The Department of General Practice shall be an administrative department and not have direct clinical responsibilities or duties in the hospital." The department is composed of members of the teaching staff who are engaged in general practice and who have "demonstrated their professional competence and an ability to assist in medical education".

For clinical duties, the members of the General Practice Department at the University Hospital are attached to the clinical departments. All general physicians on the active staff may admit patients to the Department to which they are attached and treat them under that department's supervision. At

the end of each year, each general practitioner can apply to be attached to another department.

The chairman of the General Practice Department is selected by the advisory committee on that department's recommendation. Any general practitioner seeking privileges at the University Hospital is instructed to consult the General Practice Department chairman and have him recommend the appointment to the appropriate department heads at the hospital. It is customary for the advisory committee and department heads to seek the advice of the chairman of the General Practice Department when dealing with transfers of general physicians from one department to another.

Of the 26 general practitioners at Saskatoon's University Hospital, one is an active member of the Department of Anaesthesia; two are active and five are associate members of the Department of Medicine; five are active members of the Department of Surgery; ten are active members and one is an associate in the Department of Obstetrics and Gynaecology; one is an associate in the Department of Psychiatry; one is an associate member of the staff with admission privileges for all persons coming under D.V.A. supervision. Their number of teaching hours varies depending upon the department and ranges from 2 to 6 hours per week.

#### EDMONTON HOSPITALS

Active departments of general practice are functioning at three general hospitals in Edmonton and all three are teaching hospitals affiliated with the University of Alberta Medical School. These hospitals are the 400-bed Misericordia Hospital; Edmonton General Hospital with 400 beds; and the 650-bed Royal Alexandra Hospital.

#### The Royal Alexandra Hospital

The Royal Alexandra Hospital has 20 general physicians on its active or attending staff; four on the associate staff and 38 with courtesy standing. There are six departments of the hospital service: internal medicine; surgery; obstetrics and gynaecology; general practice; radiology, and pathology.

The Department of General Practice has a representative on the executive committee of the staff and on the accreditation or credentials committee. Each attending staff doctor is categorized as to the procedures he may carry out. For example, a Fellowship Surgeon would be categorized "A" in surgery but without any category in any other department. A general practitioner might be categorized "B" in all four major departments. All new applicants to the medical staff must state in writing the privileges they are applying for, and such privileges must be approved and specifically stated by the Accreditation Committee. This committee consists of the heads of the departments of the major specialties and of general practice.

As of July last year, the Department of General Practice, at the request of the hospital's executive staff, assumed responsibility for the emergency and out-patient departments. Thus these departments have become the clinical side of general practice in the hospital. The combined emergency and out-patient departments are under the supervision

of a general practitioner of the attending staff. This doctor actually lives in the hospital for a 24-hour period. These attending physicians are responsible for teaching the junior interns minor and emergency surgery and the diagnosis and treatment of emergency medical cases. At the present time 23 attending staff general practitioners are doing this work so that each man has a 24-hour spell at the hospital every 23 days.

In the emergency and out-patient departments, a specialist consultant is available in all fields but the patients are first seen and screened by a general practitioner. This treatment and teaching continues if the patient is admitted to the hospital.

#### *The Edmonton General Hospital*

The Department of General Practice at the Edmonton General is an organized segment of the medical staff comparable to that of other staff departments, with the following limitations: its responsibilities are limited to administration and education, it is not a clinical service and no patients are admitted to this department.

Since the Department of General Practice does not have a separate service, the members of the General Practice Department have privileges in the clinical services of the other departments in accordance with their experience and training, on recommendation of the Credentials Committee. In any service in which any general practitioner has privileges, he is subject to the jurisdiction of the chief of the clinical service involved. The privileges are individualized. Their responsibilities are those of a full-fledged member of the staff, with some members holding teaching appointments from the University.

There is a functioning Credentials Committee which consists of "five members and the attending staff so selected as to insure representation of the major specialties and the Department of General Practice".

There are 18 general practitioners on the attending or active staff, three on the associate staff and 74 on the courtesy staff.

#### *Misericordia Hospital*

The General Practitioners' Section at Misericordia Hospital is very much like that of the Royal Alexandra. There are 35 general physicians on its active staff and 25 with associate standing.

#### *NEW MOUNT SINAI HOSPITAL, TORONTO*

Three years ago a Department of General Practice was established in the New Mount Sinai Hospital, Toronto. At the present time there are about 220 doctors on the staff of this hospital, of whom 85 are members of the Department of General Practice.

Each morning for five days a week one senior and seven or eight junior general practitioners staff the general medical clinic of the out-patient department at New Mount Sinai Hospital. All out-patients go through this general medical clinic first. Each doctor serves on the same morning each week for a four-month period. At the end of that time he has two choices.

One provision is that he may be assigned to one of the specialty clinics of the out-patient depart-

ment. There are some 30 of these and he makes his own choice, which is honoured provided there is room for him. He serves in this clinic for a four-month period. In this way a doctor can rotate through the various specialty clinics.

The other provision which the doctor may choose is assignment to Baycrest Hospital. This is an 85-bed hospital for chronic diseases, although a percentage of its beds are for long-term convalescent patients from Mount Sinai Hospital. Most of its patients are in the old age group. The Department of General Practice is completely responsible for the care of the patients in this hospital, though specialist consultants are available. The work in this hospital is supervised by Dr. Henry Himel, who specializes in geriatrics. He is an excellent teacher and every doctor on the staff must attend his Friday morning teaching sessions. It follows that the general practitioners staffing this hospital receive excellent instruction in geriatrics.

Thus at any particular time, all 85 general physicians find themselves on duty at the out-patient general medical clinic, in the specialty clinics, or at Baycrest Hospital. When a new general practitioner is appointed to the staff of the New Mount Sinai Hospital, he must first give a year's service at Baycrest Hospital. During this time his interests and abilities are assessed.

The Department of General Practice is largely responsible for the discipline of its own members. For instance, at the out-patient clinic each doctor signs an attendance sheet and the senior man is responsible for seeing that a full staff is present.

A member of the Department of General Practice can admit his own patients to the specialty departments of medicine, paediatrics, and obstetrics and treat them. Admission of his patients to the Department of Surgery is through a surgeon who directs their surgical treatment, with the admitting doctor looking after their medical problems. Patients admitted to hospital from the general medical clinic of the out-patient department are admitted as staff patients and are looked after by the specialists of the various services. The number of staff beds is limited.

The educational program developed by the general physicians for themselves includes at least two courses each year and they expect to add an annual Clinical Day. The refresher courses have taken the form of an hour lecture weekly for 10 to 12 consecutive weeks. These courses have included instruction in dermatology, proctology and fluoroscopy. Plans are being made for a course on electrocardiography during this winter.

After January 1, 1958, all general practitioners on the active staff of the hospital must be members of the College of General Practice of Canada. The reason for this action is stated to be that the College of General Practice is laying down standards for general practitioners which the hospital wishes to recognize and support.

Dr. C. B. Solursh, the chairman of the Department of General Practice, states there is general agreement that there has been a very marked improvement in the relationship between the various groups of doctors in the hospital since the establishment of the Department of General Practice.

## Association Notes

### THE 91st ANNUAL MEETING: HALIFAX

The following story (reproduced by courtesy of the Nova Scotia Press Bureau) tells something of this year's C.M.A. convention city. We will meet in Halifax, N.S., from June 16-20.

Halifax, city of history and the sea, now in the dawn of its third century can look back over the turbulent record of two centuries in which it was the scene of more historic events, and endured more hardships for the national cause, than any other city of Canada.

Since its founding in 1749 by Lord Cornwallis the story of Halifax has been one of booms and slumps, violence and calm, a tempestuous yet romantic record only equalled by Old World cities centuries older.

Halifax began its career as a military post—buffer between the British colonies of New England and the great French stronghold of Louisbourg—and it has never lost completely its garrison atmosphere.

In 1758 a British expedition left Halifax to attack the fortress of Louisbourg, capturing it and thus removing the threat to New England and the prime reason for Halifax's existence. Remains of the great French bastion may be seen at Louisbourg, Cape Breton. Some of the rock from the walls of the great fortress was brought to Halifax and used in construction of many buildings.

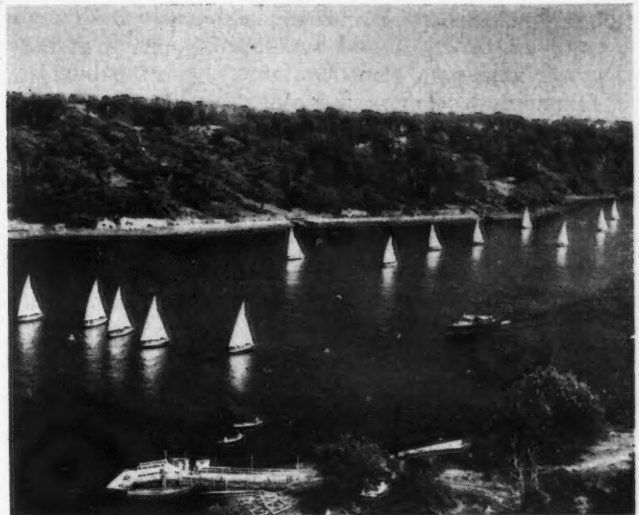
Halifax was heavily garrisoned by the Imperial Army and Navy for a century and development of the harbour was along military rather than commercial lines. Today there are 13½ miles of built-in waterfront with 30 berths and fine ocean terminals capable of accommodating the greatest ocean liners and naval craft afloat.

Over the years Halifax has developed a distinctly cosmopolitan way of life, brimming with energy and multiple progressive enterprises. It houses sixty or more industries. It is the medical centre of the Maritime provinces and in the new, modern Victoria General has the tallest hospital in the British Commonwealth. In Dalhousie it has the Maritimes' largest university.



Nova Scotia Film Bureau.

Halifax, capital city of Nova Scotia, boasts one of the world's finest harbours.



Nova Scotia Film Bureau.

White sails reflect on the blue waters of scenic North West Arm, Halifax.

Halifax claims Canada's first public school (1749), first newspaper (*Halifax Gazette*, 1752), first printing press, first Protestant church (St. Paul's Church of England, 1749), first dockyard and first post office. The first hockey game in America was played in 1825 on the first skating rink in the country.

The city is seated around Citadel Hill, crowned by Fort George, overlooking one of the world's finest harbours—on the trade routes of the world and open the year round. On the west lies the beautiful North West Arm, an aquatic paradise. To the south is the open Atlantic.

Although modern in essentials, Halifax fully retains that outpost-of-empire atmosphere that caused Kipling to class it with romantic Gibraltar, Malta, Bombay and Singapore.

Here stand unchanged quaint Imperial barracks, a martello tower in Point Pleasant Park, a stately Citadel on the slopes of which is the Old Town Clock, erected by the Duke of Kent and which has been ticking away the hours for Haligonians and visitors for over a century and a half; Province House, a Georgian masterpiece and seat of the Nova Scotia Legislature; old St. Paul's cemetery containing the grave of a British general who burned the White House in Washington in 1814; Memorial Tower in Fleming Park on the west side of the North West Arm commemorating the first elective assembly in the Dominion.

In 200 years its streets have echoed to the footsteps of such celebrities as King William IV; Horatio Nelson; Louis-Philippe, duc d'Orléans, afterwards King of France; William IV, the "Sailor King"; Samuel Cunard, founder of the famed Cunard Line Steamships, who was born in Halifax, and other figures of historic bygone years.

In the heart of the city is the Public Gardens, one of the most beautiful botanical spots in America, comprising 18 acres of tree-fringed loveliness.

Three times within living memory the waters of expansive Halifax harbour have been bridged. The first structure was completed in 1885 and lasted until 1891, when it was swept away in a storm. The second, constructed almost immediately, collapsed in 1893.

The third bridge, named in honour of the late Premier of Nova Scotia, the illustrious Hon. Angus L. Macdonald, completed three years ago is the second

longest suspension-type bridge in the British Commonwealth and in the world outside of the United States. Its mile-long span links Halifax and the bustling town of Dartmouth, dominating a skyline which silhouettes massive grain elevators, shipyards, naval dockyards, railway terminals, hotels and commercial buildings.

Halifax retains much of her military bearing, her old world flavour, and a salty independence that has seen her successfully through two centuries. As "War-den of the North", Halifax has lived up to the title bestowed upon her by Kipling.

(To be continued)

Prospective visitors to Halifax would do well to consult the Nova Scotia Tourist and Information Bureau, Provincial Building, Halifax, N.S., for information on sightseeing and touring in the province.

## MEDICAL MEETINGS

### FIRST CANADIAN MENTAL HOSPITAL INSTITUTE

Another sign of the growing independence and increase in stature of Canadian medicine was furnished by the first Canadian Mental Hospital Institute, held at the King Edward Sheraton Hotel in Toronto, January 20-24. This Institute was under the joint sponsorship of the Canadian Psychiatric Association and the American Psychiatric Association and had as its theme "The Mental Hospital and the Changing Community." It was attended by nearly 200 persons, and was generally voted a great success.

All sessions were plenary and usually consisted of a short introduction to the topic, followed by free discussion from the floor. Although each topic was allotted about one and a half hours, there was no lack of discussion at any point. Not only Canadian but also a number of United States psychiatrists were present, and the sessions had as their general moderator, Dr. Daniel Blain, Medical Director of the American Psychiatric Association.

The sessions began with an opening ceremony by His Worship Mayor Nathan Phillips, Q.C., and continued with the following topics: *New Perspectives in Mental Hospital-Community Relationships*: Topic 1: Current Trends in Consolidating Relationships with Other Community Medical Facilities—Dr. D. G. McKerracher (introductory speaker); Topic 2: Current trends in consolidating mental hospital-community relationships—Dr. K. A. Yonge. *New Community Approaches to Special Problem Areas*: Topic 3: The forensic patient—Dr. K. G. Gray, Q.C.; Topic 4: The emotionally disturbed child—Dr. F. A. Dunsworth. *The Mental Hospital as a Therapeutic Community*: Topic 5: From custodial care to modern therapy—Dr. B. H. McNeel; Topic 6: The open-door concept—Dr. H. B. Snow. *Creating Community Understanding and Support*: Topic 7: Public relations and the mental hospital—Dr. C. A. Roberts; Topic 8: Volunteers in mental hospitals—Dr. A. M. Gee. *New Community Approaches to Special Problem Areas*: Topic 9: Day and night hospitals—Dr. A. E. Moll. *Patient Rehabilitation: A Job to be Shared with the Community*: Topic 10: Rehabilitation services within

the mental hospital—Dr. Humphry Osmond; Topic 11: Rehabilitation: Sharing the job with the community—Dr. J. S. Tyhurst. *Special Areas Involving Mental Hospital-Community Relationships*: Topic 12: The role of non-psychiatric professionals in patient readjustment—Mr. E. A. Perretz and Dr. H. Gundry; Topic 13: Problem of addiction—Dr. J. D. Armstrong. *The Mental Hospital as a Teaching and Research Centre*: Topic 14: The research potential of mental hospitals—Dr. R. Cleghorn; Topic 15: Teaching in the mental hospitals—Dr. G. E. Hobbs.

On Wednesday morning an academic lecture was given at Osler Hall entitled "Experiments in Mental Hospital Organization" by the Honourable Walter S. MacLay, Senior Commissioner, Board of Control, Ministry of Health, London, England. Mr. MacLay pointed out that his remarks applied to the United Kingdom only, and quoted the recently published report of the Royal Commission on the law relating to mental illness and mental deficiency, which stressed the importance of putting the mentally ill on the same footing as the physically ill, of expanding community services for mental patients, of abolishing separate designation of mental hospitals, and of recognizing three classes (the mentally ill, psychopathic, and mentally defective). In the United Kingdom the barrier between mental and physical illness was being broken down by the use of general hospital out-patient departments for mental illness; there were now 500 such departments for adults, staffed by physicians from mental hospitals. The principle was also accepted that the general hospital should have psychiatric beds linked with a mental hospital. Arrangements have just been completed for the informal admission of mental defectives and reclassification of those at present in hospital into admitted and informally admitted. Mr. MacLay stressed that no more large mental hospitals would be constructed in the United Kingdom, and quoted the Worthing experiment on the use of domiciliary visiting and out-patient sessions to relieve strain on mental hospitals. Enthusiasm must be created for psychiatry in order to attract young personnel, and medical students should be shown psychiatry in action.

He said that the fall in the absolute number of chronic patients in U.K. mental hospitals may be due to the realization that some "chronics" are made "chronic" by the regimen. Tranquillizers can be a menace outside hospital and a blessing inside. He pointed out the value of purposeful and remunerative work for patients and also of more freedom; only one-third of all ward units are still locked in the U.K.

The Institute dinner was held on Monday evening in the Crystal Ballroom of the King Edward Hotel and the gathering was addressed by Dr. C. B. Farrar, Professor Emeritus, Department of Psychiatry, University of Toronto, who recalled his happy days in the golden eras of Harvard, Johns Hopkins and Heidelberg.

### CANADIAN CANCER RESEARCH CONFERENCE

The Third Canadian Cancer Research Conference will be held at Honey Harbour, Ontario, June 15-19, 1958. Sponsored by the National Cancer Institute of

Canada, this conference is primarily designed as a review of present knowledge on various aspects of cancer for the benefit of Grantees and Fellows of the Institute. The topics to be discussed include nucleic acids, genetics, viruses and tumours and biology of cancer. Since accommodation is limited, attendance must be by application only. Further information may be obtained from Dr. Robert L. Noble, Collip Medical Research Laboratory, University of Western Ontario, London, Ont.

## MISCELLANY

### HYPNOTISM AND MEDICINE

Hypnosis has not made much medical progress since the days of Charcot. Freud's disciples have not shared the master's early enthusiasm for it,<sup>1</sup> and around 1910 Babinsky declared it a failure.<sup>2</sup> In the last few years interest has been revived in different quarters, partly in obstetrics,<sup>2, 3</sup> partly in anæsthesia,<sup>4</sup> possibly in an attempt to build a new science from the foundation of an ancient art. Psychiatrists and clinical psychologists apparently use it.<sup>5, 6</sup>

Hypnotism may be described as the process which produces any form of induced sleep or trance which increases the susceptibility of the mind to suggestion or direction.<sup>7</sup> A 3000-year-old Egyptian papyrus describes its practice much as it is used today.<sup>3</sup> It has long remained in the realm of religious rites, witchcraft and magic. Paracelsus made it the object of a study.<sup>8</sup> The first operation under hypnosis was performed by Récamier<sup>3</sup> in 1821, and in 1829 Cloquet<sup>8</sup> resected a cancer of the breast using this form of "anæsthesia". Hysterical manifestations of recent onset and inhibitions resulting from pent-up emotions have been ideal conditions for this form of therapy.<sup>1, 9</sup> Inhibitions usually released under light barbiturate narcosis can be handled just as well under hypnosis. It is even claimed that hypnosis may replace analysis with advantage in dealing with the symptoms of patients whose intellectual capacities preclude the introspection required in analysis.

Hypnosis may also be used to overcome habituations such as smoking, alcoholism and obesity.<sup>1</sup> In these conditions it is much less efficacious; repeated sittings may be necessary, with diminishing returns. Psychosomatic disorders may respond in proportion to the part played by anxiety in perpetuating the ailment.

The form of anæsthesia obtained through hypnotism in childbirth justifies the term "suggestive relaxation" used by certain authors.<sup>10</sup> The result obtained approximates more closely than any other to natural physiological childbirth. This particular application has had enthusiastic followers in the medical profession. The late Dr. DeLee once wrote, "The only anæsthetic without danger is hypnotism . . . I am hurt when I see my colleagues neglect to avail themselves of this harmless and potent remedy."<sup>11</sup> This faculty of inducing anæsthesia may be exploited in superficial trauma requiring minor surgery or in the intractable pain of terminal carcinomatosis.<sup>1-10</sup> Its use has been suggested not only in the dental field<sup>12</sup> but also in more elaborate interventions, either alone or in combination with traditional anæsthetic agents. In combination hypnosis is used for preoperative and post-operative sedation and for controlling post-anæsthesia

nausea, vomiting and pain.<sup>4</sup> Goldie suggests that hypnosis or suggestion may be used to some advantage in casualty departments, in the treatment of minor injuries.<sup>13</sup> Authorities in this field have repeatedly warned of the serious consequences which may result from suppressing pain as an alarm mechanism in organic disease.<sup>14</sup>

Earnest proponents of hypnotism in medicine do not offer it as a panacea<sup>7</sup> but consider it as an adjunct to treatment.<sup>9</sup> It is not universally applicable and not all patients can be hypnotized nor can all physicians become hypnotists. Experienced hypnotists claim a 90% coverage of the population at large.<sup>15</sup> Other authors quote much lower figures<sup>16</sup> which are further reduced by the fact that not all susceptible patients will respond even if their ailment usually falls within the scope of the method. Experts claim that most physicians with some degree of practice can become proficient in the art of hypnotism. Very few curricula (if any) of medical schools devote any time to its teaching. Medical associations continue to receive inquiries concerning short courses (two to three days) being set up by so-called "schools" of hypnosis that are not sponsored by any university or medical school. It is said that some "schools" of this nature are even advertising correspondence courses in the practice of hypnosis.<sup>17</sup> In view of this, responsible bodies such as the Council of the British Medical Association have recommended that "a description of hypnotism and its therapeutic possibilities, limitations, and dangers should be given to medical undergraduates during their psychiatric course. Instruction in the clinical use of hypnotism should [also] be given to all medical post-graduates training as specialists in psychological medicine and possibly, say, to trainee anæsthetists and obstetricians . . ."<sup>7</sup>

In obstetrics the number and duration of sessions to be spent with expectant mothers is the main stumbling-block to the extension of this method. Just how many visits a patient will require before one can feel confident of satisfactory anæsthesia is uncertain; it can be one, 20, or even more.<sup>3</sup> However, when the time for delivery comes, it is claimed that if the patient has been well prepared, she can be placed in a hypnotic state by the physician either personally or by telephone. The time element holds true in all other fields of application. An unusual degree of dependency may also result from this form of therapy, with all its annoying implications. However, being on the whole a method which leaves few scars and makes no fundamental change in the personality that would not have occurred in the course of individual development, and being effectual when traditional methods sometimes fail, hypnotism may be a great time and money saver.

Richard Asher made a plea for the acceptance of hypnosis as a reasonable form of treatment in selected cases.<sup>9</sup> Physicians may find it difficult to overcome their reluctance in applying a method of treatment about which so little is known. This reluctance may also stem from the fear of being associated with faith healers and quacks. Others consider it an indecent subjugation of will, though, for that matter, it is less so than the probing of psychoanalysis. Although hypnosis has long been associated with circus performers, conjurers, and party entertainers, it constitutes a challenge to medical science. The work of a subcommittee of the Council of the British Medical Association appointed

in order to discourage the use of hypnotism by charlatans led to the passing of the Hypnotism Act of 1952 in England. It is interesting that as far back as 1821, a committee appointed by the French Royal Academy of Sciences produced a report whose conclusions showed remarkable foresight and are still mainly applicable today. As far as we can establish, no such corresponding measure exists in Canada.

M.R.D.

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#### MYXEDEMA REFLEX

To the Editor:

Dr. C. Stuart Houston is to be congratulated for drawing attention to the so-called "myxedema reflex", and to the frequency of hypothyroidism (*Canad. M. A. J.*, 78: 108, 1958), which is much less rare than generally supposed.

In his report, Dr. Houston mentions that protein-bound iodine determinations proved to be diagnostic in only one instance. It is my impression that the diagnostic accuracy of this test is considerably higher than 33 1/3%, and I would feel that considerable doubt remains as to the presence of hypothyroidism in some of these cases, the "myxedema reflex" notwithstanding.

In view of the statement that the sign is "virtually diagnostic", it would be of considerable interest to confirm the diagnosis in the entire group. I feel certain that Dr. Houston does not suggest that the "myxedema reflex" replace the excellent diagnostic techniques presently available. Nevertheless, one is given the impression that the cornerstone of diagnosis in his series of patients was the slow relaxation of a myxedema reflex.

GERALD E. SINCLAIR, M.D.

612 Medical & Dental Bldg.,  
Regina, Sask.,  
January 24, 1958.

## LETTERS TO THE EDITOR

### THE EARS AND RENAL MALFORMATIONS

To the Editor:

I found the article in the January 15, 1958 issue of the Journal entitled "Bilateral Agenesis of the Kidneys" by Dr. James Duxbury to be of special interest.

The photograph in his report (Fig. 1) of a profile view of the head and face of the patient under discussion revealed some unusual characteristics of the ear which the author described as being "enlarged and very soft and pliable."

An association between malformation of the ears and the genito-urinary tract has been described in a report entitled "Malformation of Ears as Sign of Malformation of Genito-Urinary Tract" by D. Hilson, D.C.H., consultant paediatrician, Oldham and District Hospital, Oldham, England, which was published in the October 5, 1957 issue of the *British Medical Journal*. A photograph in Hilson's report (Fig. 11) of a profile view of the head and face of one of the patients discussed reveals abnormalities of the ear rather similar to those noted in Duxbury's patient.

I felt it was worthwhile to bring this matter to your attention because in a recent communication I received from Dr. Hilson he indicated a very special interest in receiving comments from other physicians who might have encountered similar cases in their own practices.

GEORGE X. TRIMBLE, M.D.

Director of Medical Education,  
Seaside Memorial Hospital of Long Beach,  
1401 Chestnut Ave.,  
Long Beach 13, Cal.,  
January 29, 1958.

To the Editor:

I appreciate the opportunity of replying to Dr. Sinclair's letter.

The diagnosis of hypothyroidism should be a clinical one. Indeed, the laboratory tests cannot be ordered until the diagnosis is first entertained. It would be ridiculous to pronounce on the relative merits of various laboratory procedures from a series of five cases, or to speak in terms of percentage accuracy regarding a test completed in only three cases. I merely summarized the result of my five cases. Conclusions could be drawn only if the series were much larger.

Dr. Sinclair apparently questions the diagnosis in two cases with protein-bound iodine determinations of 4.0 and 4.3 micrograms %. While not diagnostic, these results are still consistent with hypothyroidism. (In the laboratory concerned, the boundary between hypothyroid and euthyroid is considered to be 4.0 micrograms %, with a range of error of 0.5 micrograms %).

A person located where he can utilize the full battery of tests may find it difficult to accept a diagnosis made without them; anyone writing from a university centre would be expected to supply more laboratory data. I admit this was a weakness in my paper, but it was unavoidable.

In only one of my cases was the myxedema reflex truly the "cornerstone" of my diagnosis. In the other four, the diagnosis already had been entertained. Further, the reflex in each case was demonstrated to the satisfaction of my very sceptical senior partner.

Every physical examination can disclose whether or not a myxedema reflex is present. It is thus a type of screening test, with no delay and no expense involved. Available laboratory procedures should then be utilized—not to make the diagnosis, but to confirm it.

In conclusion, I can only repeat that all five patients in question improved on thyroid therapy—and they are grateful patients.

C. STUART HOUSTON, M.D.

Smith Block,  
Yorkton, Sask.,  
February 4, 1958.

### MEDICAL BROADCASTING

To the Editor:

On Thursday evening, January 16, I happened to tune my radio set to the CBC Trans-Canada program "Roving Reporter" and not unnaturally pricked up my ears when I found myself transported, as it were, inside the office of a gentleman whose name was mentioned several times and who was stated to be a plastic surgeon practising in the city of Winnipeg. After a tribute from a patient on the excellent results of this surgeon's operation, the radio audience were then regaled for 10 minutes with an interview between the CBC reporter and the surgeon. We were told of his excellent and up-to-date postgraduate training and something of his medical publications, and then given at some length a description of his work in plastic surgery with particular reference to his methods and good results in the art of reshaping noses. Even some discussion on the modest fee which would be charged a prospective patient was included. Finally another pat on the back from a grateful patient and the broadcast was over.

At least that was my impression and I was left somewhat aghast.

Nevertheless I have not the slightest doubt that this particular broadcast, like others of a similar ilk elsewhere in Canada, was made in good faith and presumably with the knowledge and sponsorship of the local medical society and with the worthy object of improving public relations and letting the man on the street in on the doctor's job.

From all of this it would seem that medical ethics at least in relation to professional advertising is as extinct as the passenger pigeon. Perhaps, Sir, the time has come when the medical profession, at the highest level in Council, must take stock again, and decide whether we are to adhere to our traditional principles in this regard or sell ourselves lock stock and barrel to the cult of public relations.

To me it seems only logical that if we are to permit and even encourage members of the profession to broadcast and televise in this way, even if it be under the guise of good public relations, we should go the whole hog and join the shopkeepers. I believe, Sir, that we must stay on one side of the fence or the other, and I pray that the Council of The Canadian Medical Association in their wisdom will give a clear lead on this matter, and choose the side of decency, dignity and propriety even at the risk of losing a little popular appeal.

HEREFORD STILL, M.A., M.B., B.Ch.

18 Quinpool Road,  
Halifax, Nova Scotia,  
January 20, 1958.

### EDITOR'S COMMENT:

It is understood that the Public Relations committee of the Manitoba Medical Association had no intimation that the broadcast mentioned above was to be aired. The procedure of advising the Association concerned, of a proposed broadcast was not adhered to. The following extract from the C.M.A. "Code of Ethics" on radio broadcasting relative to medical science is published in the interest of the profession as a whole:

### EXCERPT FROM THE C.M.A. CODE OF ETHICS— 1956

#### RADIO BROADCASTING

"It is legitimate and even desirable that topics relating both to medical science and policy and to public health and welfare should be discussed by physicians who can speak with authority on the question at issue. In any medium of discussion, but especially radio broadcasting because of its vast range, it is essential that the physician who takes part *should avoid methods which tend to his personal professional advantage. Not only should he personally observe this rule, but he should take care that the announcer in introducing him make no laudatory comments and no unnecessary display of the physician's medical qualifications and appointments.* There is a special claim that physicians of established position and authority should observe these conditions, for their example must necessarily influence the action of their less recognized colleagues. These remarks apply particularly to practising physicians. A physician serving in a public capacity is in a different position but even he should see to it that it is his office rather than himself, that is exalted."

## THE LONDON LETTER

(From our own correspondent)

### ST. THOMAS'S HOSPITAL

St. Thomas's Hospital, on the south bank of the Thames, opposite the Houses of Parliament, has the finest site of any hospital in London. This fact partly explains the delay in finalizing plans for dealing in any permanent manner with the severe damage which it sustained from bombing during the Second World War. Seven of its 30 wards were destroyed by enemy action and 14 were rendered unusable. The experts soon came to the conclusion that patching and mending were out of the question and that nothing less than complete rebuilding would provide a satisfactory solution to the problem. To plan a building worthy of the site, and one which would satisfy all the interested parties, including the Ministry of Health, was a formidable task, but it now looks as if what at one time had seemed the impossible has been achieved.

A completely new building is to be erected at a cost of around £7 million. It will contain 827 beds and be 140 feet high, compared with the 80 feet of the present building. The present area of the hospital is 8½ acres, but in the new building this will be virtually doubled. The rebuilding will be done in stages so as not to interfere with the activities of the hospital, and the present estimate of how long it will take to complete the scheme varies from nine to twelve years. Final

approval has still to be obtained from the London County Council, which is the planning authority, and the Royal Fine Arts Commission, but the governors of the hospital are hopeful that work on building will start next year.

#### ARTIFICIAL INSEMINATION

Artificial insemination by a donor is not adultery as the law of Scotland now stands, according to a judgment just given in the Court of Sessions in Edinburgh. Lord Wheatley, who delivered the judgment, also expressed the view that this was also the position in English law. Whilst he agreed that it was "almost trite" to say that a married woman who was artificially inseminated in order to have a child who would not be the child of her marriage had "committed a grave and heinous offence of contract of marriage", he pointed out that this was not the point at issue. His views are perhaps best summarized in the two following quotations from his judgment: "The idea that adultery might be committed by a woman alone in the privacy of her bedroom, aided and abetted by a syringe, is one which the earlier jurists had no occasion to wrestle. Certainly, this form of perpetuation of the species does not conform to the common conception of adultery." "Just as artificial insemination extracts procreation entirely from the nexus of human relationship in or outside marriage, so does the extraction of the nexus of human relationship from the act of procreation remove artificial insemination from the classification of sexual intercourse. If my views be correct, then it follows logically that artificial insemination by a donor without the consent of the husband is not adultery as the law interprets the term."

This judgment has brought the whole subject to the fore for the first time in this country, and the matter is shortly to be ventilated in the House of Commons. The medical reaction so far has been minimal, but the legal reaction is probably best epitomized in the following comment of the legal correspondent of *The Times*: "The Seventh Commandment, morality may suggest, was intended by the omniscient to proscribe such practices, whether cruel or not; but the Men of God and the Law who have implemented it appear to have taken a narrower view, and the situation, it seems, can best be rectified now by legislation."

#### VENEREAL DISEASE

The latest figures for the incidence of venereal disease are somewhat disquieting. The number of cases of gonorrhoea is rising steadily: from 17,845 in 1955 to 20,388 in 1956. What is equally disturbing is the experience of venereologists that the gonococcus is tending to become penicillin-resistant. The social implications of this increase are perhaps more significant than the medical aspects. In his latest annual report the medical officer of health for Middlesex, after noting the increasing number of girls under the age of 18 who are attending venereal disease clinics, comments: "These girls may be suffering from a non-venereal disease or even not be in need of treatment at all but attend the clinic for a check-up on their own initiative or on the advice of girl friends and mostly without referral from a general practitioner. The inference that they have to their own knowledge run the risk of contracting a venereal disease is inescapable, and while their readiness to seek examination is commendable, the

social problem which it reflects should not be disregarded."

#### A NOTABLE NONAGENARIAN

There can be few men who have celebrated their ninetieth birthday as Sir Leonard Rogers, the eminent authority on tropical medicine, has just done. His 90th birthday was on January 18, and the *Lancet* of that date contained a four-page article by him on 'Forecasting and Control of Cholera Epidemics in South-East Asia and China'. Sir Leonard entered the Indian Medical Service in 1893, and it is 47 years since his classical study on "Cholera and its Treatment" was first published. His nonagenarian article is as lucid and stimulating as ever, and is a notable tribute to the continuing interest he takes in a subject which he has made particularly his own.

WILLIAM A. R. THOMSON

London,  
February 1958.

## ABSTRACTS from current literature

### MEDICINE

#### Agents Isolated from Patients with Boston Exanthem Disease during 1954 in Pittsburgh

F. A. NEVA AND S. M. ZUFFANTE: *J. Lab. & Clin. Med.*, 50: 712, 1957.

In 1951 an epidemic of an unusual, previously undescribed exanthematous disease occurred in Boston, and agents cytopathogenic for tissue cultures were recovered from the faeces of patients. Another outbreak of this condition, now described as Boston exanthem disease, occurred in and around Pittsburgh in 1954. In the latter epidemic, viruses were isolated from the faeces of almost every patient, while throat washings, in contrast, appeared to be less suitable for the recovery of these agents. Viræmia was demonstrated in only one case. The best tissue culture materials for isolation of virus proved to be monkey testis and human embryonic skin, muscle or foreskin.

Neutralizing antibody responses in Pittsburgh patients indicated a close antigenic relationship of local strains to similar agents associated previously with the same type of disease in Boston; while the agents isolated from the patients with the Boston exanthem disease could not be recovered from certain cases of other known or unclassified febrile exanthems, or from patients with other illnesses occurring in the same area at the same time.

These observations strengthen the likelihood that the viruses described are related to those of the Boston exanthem disease.

S. J. SHANE

#### Intracardiac Phonocardiography in Man.

D. H. LEWIS *et al.*: *Circulation*, 16: 764, 1957.

A new technique for the detection and study of heart sounds within the heart in man is described. This method uses the technique of underwater listening developed for undersea warfare and applies it directly to the study of heart sounds. These studies can be done at the time of right-sided cardiac catheterization with no additional hazard to the patient.

Characteristics of the heart sounds in the lesser circulation are described. The first heart sound is the

loudest in the right ventricle. The fourth heart sound is loudest in the right atrium.

This technique is capable of localizing heart sounds and murmurs to an extent not heretofore obtainable. The addition of this instrument will materially increase knowledge of the origin of heart sounds and murmurs. The application of this technique to the other studies done at the time of cardiac catheterization should be of definite help in the diagnosis of congenital heart disease.

S. J. SHANE

#### Ventricular Septal Defects in Infants.

S. C. ZACHARIOUDAKIS *et al.*: *Circulation*, 16: 374, 1957.

Clinical features of postmortem findings are analyzed in 23 infants who had ventricular septal defect and died in heart failure. This defect comprised 23 (8%) of 288 major cardiac malformations observed at autopsy over a 20-year period at a children's hospital. The majority of the deaths occurred during the first three months of life. Haemodynamic data obtained on six of these infants revealed a large left-to-right shunt and marked right ventricular and pulmonary artery hypertension in all. In three of the patients the shunt appeared at the atrial as well as the ventricular level. In five the systolic pressure in the right ventricle was equivalent to the pressure in the systemic artery. There was a wide variability in the electrocardiographic findings with respect to evidence of ventricular hypertrophy. Patterns of right, left, and combined ventricular hypertrophy were found without apparent correlation with the clinical, haemodynamic, or postmortem findings. No apparent relationship was found between the size of the defect or its location on the septum and the clinical manifestations or age at death. Four of the hearts had small defects less than half the diameter of the aortic orifice. The surgical implications of these findings are as follows:

1. The frequency of early death necessitates surgery in the first few months of life if a significant reduction in the fatality rate is to be achieved.

2. Even in infants who survive the early months of life, pulmonary vascular changes are commencing that may well preclude surgery at a later date, and the data accumulated in this and other series indicate the range of anatomic variations that the surgeon must be familiar with and be expected to cope with—the wide range in the size of lesions, multiple defects, and unusual locations of the defects in the septum.

S. J. SHANE

#### Pathogenesis and Treatment of Pulmonary Tension Cavities.

B. P. SANDLER: *Am. Rev. Tuberc.*, 76: 370, 1957.

Tension cavities are often encountered in pulmonary tuberculosis. The cavities are caused by a check-valve mechanism resulting chiefly from two factors—an organic bronchial obstruction or a mechanical bronchial obstruction. Most often there is a combination of the two factors. In planning therapy for patients with tension cavity it is important to keep in mind the fundamental relationship between the obstructive mechanism in the draining bronchus and the development, persistence and obliteration of the tension cavity. The plan of therapy should be directed towards the relief of the bronchial obstruction.

The concept of the tension cavity is valuable because it helps explain several clinical phenomena, such as the development of a cavity in a short period of time;

the development of a cavity in an area of lung that had not been the site of a caseous lesion capable of excavating and giving rise to cavity; the fluctuation in size, with or without fluid level, at irregular intervals; variations in amount and character of the sputum; transient or permanent blocking of the cavity with replacement of cavity gas by secretions; the origin of sputum "streaking" and localized chest pain or soreness during the development of the tension cavity; and the rapid closure of cavity and healing with a minimal scar.

One feels, however, that, with antimicrobial therapy and excisional therapy this concept can be over-stressed.

S. J. SHANE

#### Clinical and Hemodynamic Studies of Myocardial Fibrosis.

R. E. NYE *et al.*: *Circulation*, 16: 332, 1957.

Three patients are presented with intractable heart failure. Two had proved myocardial fibrosis, and the probable diagnosis of myocardial fibrosis in the third patient was based on the operative findings. However, many clinical and haemodynamic features in these patients strongly suggested constrictive pericarditis, particularly the right ventricular and right atrial pressure contours, although the pericardium was normal at operation.

The authors suggest that the differentiation between these two conditions can sometimes be made on quantitative grounds. Severely disabled patients with right ventricular end-diastolic to systolic pressure ratios clearly less than one-third, and with right atrial mean pressures well below 15 mm. Hg, are unlikely to have constrictive pericarditis. Any considerable respiratory variation in right atrial pressure contour increases the likelihood that the diagnosis is myocardial fibrosis rather than constrictive pericarditis, as does the observation that the right ventricular early diastolic dip goes below the baseline. If these observations are confirmed and extended, it may become feasible to spare certain of these patients unnecessary thoracotomy. Patients with converse findings should be explored, even though cases of myocardial fibrosis will be included.

S. J. SHANE

#### Electrocardiographic Diagnosis of Myocardial Infarction in the Presence of Left Bundle-Branch Block.

M. G. CHAPMAN AND M. L. PEARCE: *Circulation*, 16: 558, 1957.

It is generally accepted that most myocardial infarctions are obscured on the electrocardiogram by left bundle-branch block. However, a study of the electrocardiograms of 50 patients with myocardial infarction and left bundle-branch block (LBBB) reveals that QRS changes apparently characteristic of myocardial infarction are often present.

Extensive antero-septal infarction in the presence of LBBB is associated with Q waves in leads I, aVL and V<sub>1</sub>, and an abnormal precordial R progression. When the infarction is less extensive, rsR' complexes are present in the same leads, and the S wave or QS deflection in the precordial lead just to the right of the transition zone, usually V<sub>4</sub>, is deeply notched. One or more of these findings were present in each of 17 cases of antero-septal infarction in this group. The notching of the early part of the upstroke of the R wave in left precordial leads producing an rsR' complex would appear to be the equivalent of a "delayed Q wave" in its significance in indicating antero-septal infarction.

Anterior infarction without septal involvement was present in three cases, one case having an Rs configuration in lead V6, and the other two having an abnormal precordial R progression. Nine of the 10 cases with posterior infarction were associated with a notched R wave or an R' in lead aVF. A similar configuration was present in lead III in eight of the 10 cases. Each of five cases with predominantly septal infarction in this group was associated with initial notching of the S wave in lead aVF. Similar complexes were present in most cases collected from the literature, and in published examples of the electrocardiograms of dogs with myocardial infarction and LBBB.

The electrocardiograms of several cases demonstrate that the "cavity Q wave" does not always reflect pure cavity negativity. Theoretic reasons, clinical experience, and experimental data suggest that the early notching of the R wave in leads I, aVL and V6 and of the S wave in leads aVF and V4, is different from the usual notching in uncomplicated LBBB, and is related to myocardial infarction.

Abnormal elevation of the S-T segment was present in leads I, aVL, and the precordial leads in each of the three cases of acute antero-septal infarction in the group. S-T segments were also abnormally elevated in the precordial leads in two cases with an antero-septal and apical aneurysm. These S-T segment elevations appear to have the same significance during LBBB as they have during normal intraventricular conduction. No consistent correlation of T-wave changes with ischaemia could be demonstrated.

Further clinical, autopsy, and experimental evaluation is necessary before these findings can be applied with confidence in the diagnosis of myocardial infarction.

S. J. SHANE

## SURGERY

**Significance of Cardiopulmonary Reserve in the Late Results of Pneumonectomy for Carcinoma of the Lung.**  
W. E. ADAMS *et al.*: *Dis. Chest*, 32: 280, 1957.

Pulmonary reserve in young people and dogs is very considerable. They may tolerate pneumonectomy without much resulting clinical handicap or physiologic change. Pulmonary reserve in older persons is decreased, however, and in some cases a 50% reduction in pulmonary capacity cannot be tolerated. Survival may be for three to five weeks, death being due to cardiac failure in spite of adequate blood oxygen saturation. Pulmonary artery pressure may be elevated as much as 25 to 50%, and mild exercise increases cardiac strain by additional elevation of pulmonary artery pressures to as much as 70 to 100%. The ability of dogs to compensate for the ill-effects of reduced lung capacity to 20-25% over a period of six to eight years after surgery is variable. All dogs develop pulmonary hypertension on mild exercise, to as much as twice the normal value in some instances. Studies on five patients, eight to 15 years after pneumonectomy, reveal varying degrees of pulmonary hypertension after pneumonectomy which became additionally elevated on mild exercise to as much as 300% of normal. From these studies it seems reasonable to believe that pulmonary hypertension accounts for a high percentage of deaths following total pneumonectomy in older people. Furthermore, the resection of less than an entire lung should be seriously considered in carcinoma of the lung, if it appears possible to remove all tumour-bearing tissue by that procedure.

S. J. SHANE

**Relationship of Chronic Anorectal Disease to Carcinoma.**  
J. A. BUCKWALTER AND M. N. JURAYJ: *A.M.A. Arch. Surg.*, 75: 352, 1957.

A series of 51 patients with epidermoid carcinoma of the anus or rectum had a definite history of benign anorectal disease existing before the diagnosis of the cancer. The common denominator is chronic infection, which the authors consider to be a carcinogen in these cases. A higher percentage of men than women have a history of previous haemorrhoids, fistulas or fissures antedating the epidermoid carcinoma, though the sex incidence of the benign lesions is equal. As in lip-cancer and pipe-smoking, the end of the gastro-intestinal tract in men seems more vulnerable to carcinogens. It is suggested that there is another factor leading to cancer at this site in women.

The operability rate and long survival rate in treatment of the carcinoma are higher if there is no history of benign anorectal disease.

Careful histological studies of tissue removed during operations for haemorrhoids, fistulas and fissures and long follow-up are necessary to rule out the possibility that these epidermoid carcinomas arose from the apparently benign lesions.

BURNS FLEWES

**Dangers and Complications of Intra-arterial Transfusion.**  
V. I. PRONIN: *Klinicheskaya Meditsina*, No. 7: 54, 1957.

World literature contains reports of some 3000 intra-arterial blood transfusions. The value of intra-arterial transfusion in rapidly raising the blood pressure and restoring vital functions is well established. It is, however, fraught with certain dangers. On the basis of 214 transfusions in 157 patients suffering from acute blood loss, shock (postoperative, traumatic, due to burns), agonal state and clinical death, the following observations are submitted. (1) Taking into consideration the possibility of severe complications after intra-arterial blood transfusion, this procedure should be reserved mainly for those cases where intravenous transfusion and other methods are inadequate. (2) In a few cases ischaemia of the limb supplied by the artery used for transfusion will occur. (3) To prevent this complication one should use only smaller arteries, infiltrate the arterial bed with 0.25% procaine (even if the patient is under general anaesthesia), avoid compression of the artery after transfusion, and introduce 10-15 ml. of 0.5% procaine intra-arterially at the end of the transfusion. (4) To combat arterial spasm procaine block and massage of the limb are usually sufficient. In extreme cases, arteriotomy and sympathectomy may be needed.

W. GROBIN

**Effect of Thermal Burns on Wound Healing.**

S. M. LEVENSON *et al.*: *Ann. Surg.*, 146: 357, 1957.

Guinea-pigs were used to evaluate the healing of incised wounds after a one-third body surface third-degree burn. A fall in urinary, blood and tissue ascorbic acid levels follows burning, and the animal (or patient) behaves biochemically like a scorbutic. The wounds healed abnormally: there was ample fibroplasia but frequent haemorrhages and excessive reticulum with scanty collagen. Large doses of vitamin C in the postoperative period prevented the abnormal wound changes in the burned animals. The physiological effect correlates with the observed biochemical change. What happens to the vitamin C in the burned animal is not yet known.

BURNS FLEWES

**Ten-Year Survival of Metastatic Pulmonary Choriocarcinoma following Bilobectomy.**

L. J. LEAHY *et al.*: *J. Thoracic Surg.*, 34: 539, 1957.

The incidence of demonstrated pulmonary metastases from choriocarcinoma of the uterus is approximately 55%. That this is of great prognostic significance is evidenced by the fact that only two patients out of 41 with metastases to the lung, in a series of 74, survived six months. Operation for these hæmatogenous metastatic pulmonary lesions has been described recently in a few cases. The usual forms of therapy relied on, which include nitrogen mustard, x-ray and androgens, after complete removal of the uterus and adnexæ, have given equivocal and generally only palliative results.

A case of delayed metastatic choriocarcinoma of the lung was treated solely by bilobectomy. The patient is alive and well ten years later with no evidence of spread or recurrence. This is unique and demonstrates that pulmonary excision alone may have a place in the therapy of this malignant lesion, after the primary tumour and adnexæ have been treated. S. J. SHANE

**Indications for Operation in Congenital Pyloric Stenosis.**

K. BETKE, E. WEISSCHEDEL AND L. GISINGER: *Deutsche med. Wchnschr.*, 82: 1601, 1957.

In the U.S.A., operation is the treatment of choice for congenital pyloric stenosis. In Europe mild cases are generally treated medically, operation being reserved for the more severe forms. The authors compare and contrast both forms of treatment. Medical treatment avoids operative intervention but has the disadvantages of prolonged stay in hospital and increased cost and increased exposure to infection of already debilitated children. Frequent infusions are required, which are not altogether without danger and are no less unpleasant than operation. Accordingly there has been a steady increase in the number of operations during the past five years. The present ratio is about 3:1 in the author's series, which is close to that of other authors both in Europe and in America.

The choice is made after 4-6 days of careful observation in hospital. If no marked improvement follows in spite of painstaking optimum feeding, and if there is persistent vomiting, marked peristaltic waves and a large palpable tumour of the pylorus, operation is carried out. In all cases showing typical changes in the electrocardiogram, operation is performed as soon as practicable. These criteria apply to older infants (8-10 weeks) and those not critically ill as well.

With these guiding principles, the results have been equally good in operatively and medically treated cases, and since 1954 there has been no mortality.

Treatment of congenital pyloric stenosis should not be an object of rivalry between surgeons and pædiatrics. On the contrary, this is a perfect example of the benefit to the patient from close co-operation.

W. GROBIN

**Special Problems in Venous Thromboembolism.**

W. G. ANLYAN AND D. HART: *Ann. Surg.*, 146: 499, 1957.

A study of 453 patients with attacks of thromboembolism as they occurred during seven years was made, with regard particularly to pulmonary embolism, arterial spasm and hidden cancer. There were 19 cases of acute arterial spasm complicating venous thrombosis. This is hard to differentiate from arterial occlusion, but the limb is swollen and patchy blue with prominent

veins, no sensory loss and faint pulse. Rapid relief by intravenous heparin is not easily explained. Heparin is an antagonist of serotonin, which is a product of platelet breakdown and may be the cause of arterial spasm.

Coumarin drugs and vein ligations have been disappointing methods of treatment for repeated pulmonary embolism. Pulmonary embolism occurred once after ligation of the vena cava. On dicoumarol the patient has a 15.2% chance of having another embolus. No evidence that thromboembolism was associated particularly with intra-abdominal cancer was found.

BURNS FLEWES

**THERAPEUTICS**

**Terramycin as an Adjunct in Chemotherapy of Tuberculosis.**

H. BACHMAN AND J. FREUND: *Dis. Chest*, 32: 520, 1957.

Present treatment of tuberculosis usually includes a primary agent which exerts the major tuberculostatic action, the main choice still being between streptomycin and isoniazid. To this primary agent we usually add an ancillary drug, which aids in preventing emergence of organisms resistant to the primary drug. Para-aminosalicylic acid has been the drug of choice for this purpose, but its usefulness is restricted by the frequent occurrence of gastro-intestinal irritation.

Other antituberculosis agents have been used to a lesser extent, such as viomycin and, more recently, cycloserine, but we still sorely need an alternative ancillary agent for the many cases in which para-aminosalicylic acid cannot be tolerated or is no longer effective.

The authors have used Terramycin as an adjunct to isoniazid in 16 patients; they think this combination fully as effective as any other combination of anti-tuberculosis drugs, and in a few instances, perhaps more so. The use of Terramycin as an ancillary to isoniazid, streptomycin, or viomycin is encouraged for all patients in whom para-aminosalicylic acid cannot be employed.

S. J. SHANE

**Chemotherapy of Tuberculosis: II. Some Observations on the Pharmacology of Verazide.**

S. D. RUBBO AND G. VAUGHAN: *Am. Rev. Tuberc.*, 76: 346, 1957.

In this paper some aspects of the properties and pharmacology of Verazide (3:4 dimethoxybenzal isonicotinyl hydrazone) are described. Although at pH below 2.4 the drug in solution is rapidly hydrolyzed to isoniazid and veratric aldehyde, 60% remains unchanged when given to humans as compressed uncoated tablets.

The serum and cerebrospinal fluid concentrations were measured following oral administration, and it was concluded that the optimal daily dose in humans is 20 mg. per kg. of body weight given as two equal doses of 10 mg. per kg. twice daily. The serum concentrations with this regimen fluctuated between ten and forty times the minimal concentration required to inhibit *Mycobacterium tuberculosis*.

Toxicity tests in animals and a prolonged chronic toxicity trial in humans showed that the dose recommended is quite safe. Clinical, biochemical and hæmatologic observations failed to reveal any evidence of acute or chronic toxicity in human subjects.

Because of its low solubility, Verazide would seem to be well suited for intermittent injection. However, the acute local toxicity of concentrated suspensions contraindicates its use in this manner, and intravenous injection carries the danger of embolic complications.

The authors regard Verazide as potentially superior to isoniazid for the treatment of human tuberculosis, since higher concentrations can be maintained *in vivo* without producing any toxic reactions. A clinical trial of this compound in tuberculosis has commenced.

S. J. SHANE

#### Role of Chlorpromazine in Treatment of Bronchial Asthma and Chronic Pulmonary Emphysema.

G. L. BAUM *et al.*: *Dis. Chest*, 32: 574, 1957.

Clinical experiences with the use of chlorpromazine in 35 patients with bronchial asthma and/or chronic pulmonary emphysema are reported. The effect on minute volume of respiration and arterial blood gases and pH was determined in 21 patients with chronic diffuse obstructive pulmonary emphysema.

It is concluded that the drug may be safely and effectively administered, either singly or in combination with known bronchodilator agents, in the therapy of paroxysms of bronchial asthma. In chronic pulmonary emphysema, chlorpromazine appears to be a useful adjunct, in combination with intensive therapy designed to correct errors in pulmonary ventilation.

S. J. SHANE

#### Late Results of Prolonged Multiple-Drug Therapy for Pulmonary Tuberculosis.

J. W. RALEIGH: *Am. Rev. Tuberc.*, 76: 540, 1957.

Of 794 patients started on an initial course of multiple-drug therapy for pulmonary tuberculosis, the prescribed treatment regimen was interrupted or changed for various reasons in 244 (30%) before the end of the eighth month. The subsequent fate of these 244 patients is not a part of this study. The early and the late results in 550 patients with pulmonary tuberculosis who completed initial therapy in eight months or more without interruption are reviewed.

Although the disappearance of tubercle bacilli as determined by culture and microscopy was observed in 86% of the patients, cavity closure at eight months of therapy was obtained in less than half of the entire group and in only 30% of the patients who had one or more cavities at the start. When cavity closure was obtained at eight months, the late prognosis was excellent, with relapses few in number, benign in type, and recovery of the inactive status in almost all. There were no deaths from tuberculosis in this group, and the differences in relapse incidence and severity were only slightly in favour of the surgical group.

In patients in whom a cavity persisted, even though there was temporary bacteriologic remission lasting three months or longer, the relapse rate was high. The relapse rate in the patients whose open lesions were resected was similar to that in the "closed-negative" group, but the relapse rate in patients whose cavities were not resected was much higher.

In patients with both persistent cavity and positive sputum after six to eight months of initial chemotherapy, the prognosis was poor; disease became inactive only in 50%, and in most of these inactivity was achieved only with the addition of resection or thoracoplasty.

Of 27 patients who died of tuberculosis, all were in the "open-cavity" group at the observation point, and almost 80% of those with still active disease at the time of the last follow-up examination were in this category. The importance of cavity closure as a criterion of early therapeutic success in pulmonary tuberculosis and in the incidence of subsequent relapse is obvious. An appreciation of this fact may justify surgical risks to achieve the end which might heretofore have seemed excessive.

S. J. SHANE

#### Treatment of Tuberculous Meningitis with a Combination of Isonicotinic Acid Hydrazide, Streptomycin and Para-Aminosalicylic Acid.

E. APPELBAUM AND C. ADLER: *Ann. Int. Med.*, 47: 782, 1957.

Forty-one patients with tuberculous meningitis were treated with a combination of isonicotinic acid hydrazide and streptomycin, and in many instances with para-aminosalicylic acid. In one case in relapse, the organisms had been isolated during the original attack. In another, tubercle bacilli were found by gastric lavage. Two diagnoses were confirmed by the presence of miliary tuberculosis, and one at necropsy. Roentgenologic evidence of pulmonary tuberculosis was found in 27 patients. In most instances the dose of the hydrazide was 10 mg. per kg. body weight, of streptomycin 1 g., and of para-aminosalicylic acid 6 to 12 g. per day. Of the 41 patients, 29 recovered and 12 died. The survivors have been observed for periods ranging from four months to four and one-half years, and at present most of them are in good general physical condition and normal mentally.

There were relatively few toxic reactions, particularly as a result of the hydrazide. Serious neurologic residua were encountered in four cases. Relapse occurred in two patients who responded satisfactorily to combined treatment. It is obvious that several important problems, particularly those pertaining to the choice of regimen, duration of treatment, prevention of sequelae, and addition of corticosteroids, require further investigation.

S. J. SHANE

## DERMATOLOGY

#### Melanotic Whitlow (Subungual Melanoma).

S. H. GIBSON *et al.*: *J. Invest. Dermat.*, 29: 119, 1957.

The authors analyze the 38 cases of melanotic whitlow seen from 1914 to 1955 at the Mayo Clinic and review 52 additional cases from the literature. All diagnoses were confirmed by biopsy. Melanotic whitlows made up 3%-4% of all melanomas. Patients with this form of melanoma were older than those with other forms of melanoma; the average age was 55. The lesion was commonest on the upper extremity, especially the left thumb; two-thirds of the lesions involved either a thumb or a great toe. One-half of the lesions were grossly pigmented, one-tenth painful. One-third had obvious metastases when the diagnosis was made.

Histological study of 33 of the Mayo Clinic cases revealed no practical criteria for grading malignancy or predicting the outcome in individual cases. All lesions were invasive and mitotically active. Six had no pigment and were classified as amelanotic melanoma.

Of the 38 Mayo Clinic patients, 19 are dead of melanoma (three lived longer than five years), six are dead of other causes and 12 are still living. Six of

these had been operated on less than five years previously, and three of these were known to have metastases. The authors could not draw any valid conclusions regarding preferred treatment, survival rates, or prognosis from this study. ROBERT JACKSON

#### Erythema Neonatorum Allergicum.

W. B. TAYLOR AND C. P. BONDURANT, JR.: *A.M.A. Arch. Dermat.*, 76: 591, 1957.

Erythema neonatorum allergicum is a dermatitis of the newborn, consisting of papules and pustules appearing in the first three days of life and disappearing by the sixth day. Pustules are present in only about 10% of the cases. These pustules are sterile and contain over 90% eosinophils. The rash most commonly occurs on the anterior trunk. This disorder occurs in one-third of all newborn. It must be distinguished from pyoderma, exanthems, miliaria, diaper rashes and physiologic post-natal redness. This condition has a world-wide distribution with no geographical, racial or seasonal variation. Of two hundred consecutive newborn infants observed by the authors, 62 had erythema neonatorum allergicum. Fluid from pustules in these cases was examined and found to contain 90% eosinophils and no bacteria by smear or culture. ROBERT JACKSON

#### Cutaneous Manifestations of Functioning Carcinoid.

R. R. KIERLAND, W. G. SAUER AND W. H. DEARING: *A.M.A. Arch. Dermat.*, 77: 86, 1958.

Four important systems may be involved in the functioning carcinoid syndrome: the lungs, the heart, the gastro-intestinal tract and the skin.

Cutaneous flushing of a transient nature is a characteristic symptom. This flushing usually lasts less than 10 minutes, and usually involves the face and upper torso. As the flushing becomes more chronic, telangiectasias become evident and a more persistent and permanent cyanosis and flush develops on the face. The flush may be stimulated by such factors as alcohol, enemas, emotional episodes and sudden changes in temperature. Of six patients seen by the authors five have shown the characteristic flushing and cyanosis; the other patient said he suffered from flushing but it was not observed by the authors. Confirmation of the clinical diagnosis may be made by the finding of increased amounts of 5-hydroxyindole acetic acid in the urine. ROBERT JACKSON

## INDUSTRIAL MEDICINE

#### Evaluation and Management of the Alcoholic Employee.

J. A. SMITH: *Indust. Med.*, 26: 67, 1957.

That alcoholics drink for relief rather than for pleasure must be realized by all persons actively interested in the solution of their problem. Moreover, alcoholics must be individually evaluated before judgment is passed. After certain generalizations on behaviour of this group, the author presents explanations of the cause of alcoholism, and some popular theories on how and what an individual must drink to qualify as an alcoholic. He then considers management's approach. Alcoholism is not solved by a single directive. Management of the alcoholic employee should be based on his particular problem with no bias on the part of the employer. Individual evaluation is necessary. He should have the choice of seeking treatment from his own physician or,

if he desires, the company should tell him where help may be obtained—both medical and non-medical.

In any organization the employment policy regarding management of the problem drinker should be clearly stated and impartially enforced. Those persons responsible for the alcoholic need commonsense, tact and controlled enthusiasm together with knowledge, rather than fixed, positive and unchangeable opinions about "all" alcoholics, based on their own personal experience. The person best qualified to treat the alcoholic is the individual most able to decrease the patient's need to drink; it may be his personal or industrial physician, or the family psychiatrist. The patient should be in contact with Alcoholics Anonymous. There can be no compromise with the need for total abstinence. Administratively the fact must be stressed that sobriety must become a permanent state for the employee, not a temporary one.

In conclusion the author makes suggestions about: (1) availability to employees of factual and readable lay information on alcoholism; (2) frank discussion between the alcoholic and a member of the medical department or the personnel department, of the patient's situation, the company's policy, and the benefits from contact with organizations interested in his problem; (3) the advisability of the industrial doctor being familiar with available treatment facilities and becoming acquainted with members of Alcoholics Anonymous; (4) medical treatment after physical examination. The use of disulfiram (Antabuse) or similar new drug might be considered.

MARGARET H. WILTON

#### Carcinogenicity of Petroleum Products with Particular Reference to the Automotive Industry.

R. E. ECKARDT: *Indust. Med.*, 26: 396, 1957.

After a brief review of recent medical literature, the author concludes that the carcinogenicity of cutting oils is of such a low degree that good personal and industrial hygiene practices should eliminate any cancer hazard associated with these materials. The following practices are advisable. Exposures should be avoided where possible, and minimized where avoidance is not possible. Engineering devices that will minimize exposure, such as machine guards to prevent splatter, are desirable. Any oils on the skin should be removed with soap and water as soon as practicable. Clean work clothes should be worn. There should be good medical supervision of the men involved, with a view to detecting skin changes which might be precursors of cancer. Attention is drawn to the fact that the provision of a "noncarcinogenic" cutting oil cannot be guaranteed. Consequently the incentives for good personal and industrial hygiene will remain. Moreover, substituting one cutting oil for another is no assurance that the carcinogenic hazard has in any way been changed.

Various users of petroleum products have often raised the question of the inhalation of oil mists in relation to lung cancer. There is no definite information in medical literature to suggest a relationship. Nevertheless, cases have been reported of oil pneumonitis resulting from mineral oil getting into the lung. Inhalation of oil mists, therefore, should be avoided or minimized. Further correlative studies are needed to establish the probability of hazard.

MARGARET H. WILTON

## OBITUARIES

DR. LIONEL T. ARMSTRONG, well-known obstetrician and gynaecologist, died on February 2 at the age of 60 years. Dr. Armstrong was born in Vancouver but lived most of his life in Toronto. He received his medical education at the University of Toronto, graduating in 1928, and continued his postgraduate studies in Budapest, London and Vienna. In 1932 he set up practice in Toronto and in 1934 was appointed to the staff of the department of obstetrics and gynaecology at Toronto Western Hospital, becoming chief of that department in 1946. Dr. Armstrong served on the board of governors of the Toronto Western Hospital for many years and was chairman of the medical and surgical advisory committee. He was associate professor of obstetrics and gynaecology on the faculty of medicine of the University of Toronto.

Dr. Armstrong is survived by his widow and three sons.

DR. WALTER S. BARNHART, 64, died on January 27 in Ottawa Civic Hospital. Dr. Barnhart was born at Maxville, near Cornwall, Ont., and received his medical education at McGill University where he graduated in 1919. He interned at Ottawa General and Hamilton General Hospitals and practised in Ottawa until his retirement. Early in his career he specialized in the treatment of diabetes, and later, in the rheumatic diseases. He lectured on his specialty in Europe and the United Kingdom and was the founder of the Ottawa Rheumatic Society and was a prominent member of the Canadian Rheumatism Association. For many years Dr. Barnhart was medical inspector of the Lumbermen's Safety Association and organized and ran the Rideau Rehabilitation Centre at Billings Bridge, Ont.

He is survived by his widow, one son and three daughters.

DR. DAVID BERMAN, 57, died in St. Joseph's Hospital, Victoria, B.C., on January 20. He received his medical education at McGill University, graduating in 1924. In 1925 he received the diploma in public health from McGill University. Dr. Berman was medical health officer at Saanich, B.C., for 12 years before taking up general practice in Victoria in 1940.

He is survived by his widow, a son and a daughter.

DR. ELIZABETH BECKETT MATHESON, widow of the Rev. John R. Matheson, died in San Antonio, Texas, on January 15, 1958. She graduated M.B. from Trinity College, Toronto, in 1898 and went with her husband, an Anglican missionary, to the Indian Mission at Onion Lake, Saskatchewan. Later she moved to Winnipeg and became medical inspector, with the late Dr. Mary Crawford, of the city's school children. On her retirement she made her home with a daughter in San Antonio. She was buried in the Anglican cemetery, Onion Lake, Saskatchewan. In 1948 the University of Toronto awarded her the honorary M.D. degree on the jubilee of her graduation.

DR. ROBERT THOMAS NOBLE, 87, died on January 31 after a brief illness. Dr. Noble was born in Norval, Ont., and received his medical education at the University of Toronto where he graduated in 1895. He practised in Brampton, Ont., for several years before

moving to Toronto where he practised for nearly 60 years. Dr. Noble was a past president of the Ontario and the Canadian Medical Associations, the Toronto Academy of Medicine, the College of Physicians and Surgeons of Ontario, and the Medical Council of Canada. He was a registrar-treasurer of the College of Physicians and Surgeons of Ontario for 17 years, a former president of the Medical Alumni Association and for two years was president of the Alumni Federation of the University during which time he was responsible for the organization of the centenary celebrations of the University. For many years he had been a member of the senate of the University of Toronto. In 1955 he was awarded an honorary LL.D. by Queen's University, Kingston, Ont., in recognition of his services to the profession and the community.

Dr. Noble is survived by three sons.

DR. WILLIAM SHERMAN RODGER, aged 53, died suddenly while visiting his patients at the Brome-Missisquoi-Perkins Hospital on December 4, 1957. He was born in Mansonville, Quebec, a son of the late Dr. David A. and Mabel (Boright) Rodger. He graduated from McGill, Arts 1925 and Medicine 1929. After internship for three years at the Royal Victoria Hospital, Montreal, he began his practice in Cowansville where his father had practised for many years. He served in the R.C.A.M.C. from 1941 to 1945, being overseas 11 months before being sent home because of ill health.

He was physician-in-chief and president of the Medical Board of the Brome-Missisquoi-Perkins Hospital, and past president of the Bedford branch of the McGill Graduates Society. He was a member of the Canadian Medical Association, the Montreal Medico-Chirurgical Society, and the College of General Practice of Canada. He was an active member of the Canadian Legion, Branch 99, and for many years served on the board of Cowansville High School.

Dr. Roger is survived by his widow, the former Daisy Seymour, and a son, David, now studying at McGill University.

DR. BERTRAND A. SANDWITH, physician and surgeon of Drayton, Ont., died on January 23 at the age of 79 years. Dr. Sandwith received his medical education at Queen's University, Kingston, Ont., and graduated in 1906. He practised in Nokomis, Sask., until 1932 when he moved to Drayton.

He is survived by one son and three daughters.

Mr. W. J. McKENNA

## AN APPRECIATION

In the passing of W. J. McKenna, Canada has lost another pioneer in pharmacy. As one of the four founders of Ayerst, McKenna & Harrison Limited in 1925, Mr. McKenna was a dynamic worker whose vision and untiring efforts constituted a major contribution to the development of his company. A long and eventful career was terminated by his death in Montreal at the age of 72.

It was largely due to the efforts of Mr. McKenna that the Ayerst laboratories became so closely associated with a number of outstanding clinicians and larger universities in developing practical manufacturing techniques for new drugs. He had an uncanny sense of perception in assessing the latent possibilities of research developments. His contacts were international

in scope, and from coast to coast, his business and personal friends were legion.

In 1934, Mr. McKenna was responsible for establishing Ayerst, McKenna & Harrison (U.S.) Limited in Rouses Point, New York, and he was president of the American company until 1943. He was a vice-president of the Canadian company and was very active until just a week before his death.

A native of Coaticook, he served his apprenticeship in pharmacy in Montreal and was a graduate of the Montreal College of Pharmacy. His son, Dr. Richard D. McKenna, is a well-known physician in Montreal.

## PROVINCIAL NEWS

### BRITISH COLUMBIA

At the civic elections in December and January, a plebiscite on fluoridation of water was put before the public in several cities: Vancouver, Nanaimo, North Vancouver, Richmond and others.

In Vancouver the vote was for fluoridation by a definite though not large majority, after an ardent campaign against the measure by various groups. It was definitely defeated in Nanaimo. North Vancouver and Richmond, which are included in the orbit of Greater Vancouver, were in favour. Burnaby and West Vancouver have not yet voted. Before Vancouver can introduce fluoridation, a definite majority in all the municipalities supplied by Vancouver with water must agree to accept it. There is little doubt that fluoridation will eventually be accepted.

Children under 15 in Greater Vancouver will receive tuberculin tests instead of miniature radiographs in future, the Metropolitan Health Committee announced recently. Dr. Stewart Murray, Senior Medical Health Officer, says that the decision to do this was based on two considerations: the miniature x-ray system leads to a large increase in radiation, especially undesirable in children, whose bodies are smaller; and it is more expensive. There is, he pointed out, no objection to the practice for adults.

The University of British Columbia is conducting a campaign for funds for development. Included in the project, which is to raise \$7,500,000 at least, are buildings for the medical school, at present operating in converted huts. The B.C. government has promised to pay dollar for dollar of the money collected and the collections to date are four and two-thirds million dollars.

At the inquest held recently on a woman who died in Vancouver of inanition following a long fast, naturopaths gave evidence, because the woman had, for part of her illness, been under naturopathic care. The naturopaths said that they were unable to treat patients in hospital, and the verdict of the jury practically suggested that they should be given such privileges. The B.C. Hospitals Association objected strongly to this, and several heads of hospitals made it clear that it was not acceptable. The B.C. Division of the Canadian Medical Association, through its secretary Dr. Gordon Ferguson, also registered objection, on account of the

lack of adequate training in basic and clinical sciences, and the inefficiency of the naturopathic training especially.

The matter may be the subject of an inquiry by the government through its Health Department.

The Salvation Army in Vancouver is spending \$1,600,000 in 1958 on special centennial projects. These include a new girls' home at 57th and Oak Street, and a new wing for Grace Hospital, as well as new corps centres. This magnificent organization renders untold service, especially to hungry and homeless men, through their Harbour Light, which fed 170,000 men last year and provided lodgings for 19,000 persons.

Mr. W. G. Murrin was re-elected president at the annual Board meeting.

Dr. Anne Steel of Victoria, who was injured on May 6, 1956, by a fall from a horse, is still unconscious.

The Provincial Government has announced a series of economies in its public health institutions and in certain of its penal institutions. We are told that New Haven Borstal is to be closed down. The Provincial Mental Hospital at Essondale has had a cut in staff, and may have to refuse new patients. The Woodlawn School for retarded children is refusing admissions from a growing waiting list. The rehabilitation program at Oakalla Prison Farm may be discontinued.

This is regarded by the medical profession as a very serious matter, if it is true, but no statement has yet been made in the Legislature, and the above newspaper reports may be only reports. We hope so.

In the session of 1956-57, the B.C. Legislature appointed a special committee of six members of the University of British Columbia to enquire into the value, if any, of the notorious Hoxsey treatment for cancer, as carried on at the Hoxsey Clinic in Dallas, Texas. This was done largely as a result of assertions made by Mrs. Lydia Arsens, M.L.A., who, while a member of the Legislature, systematically opposed such things as fluoridation, pasteurization, and other health measures advocated by an ignorant and self-centred medical profession. As regards the Hoxsey treatment, she was supported in her rather extravagant encomiums on its "successes" in the treatment of cancer by one or two of the CCF members of the House—and a committee was appointed to investigate. The committee consisted of: Dr. J. M. Mather, Head of the Department of Public Health at the U.B.C.; Dr. A. W. Carrothers, Associate Professor of the Law Faculty; Neal Harlow, University Librarian; Professor S. A. Jennings, Department of Mathematics; G. E. Saxton, M.D., Clinical Instructor in Surgery; and Professor H. E. Taylor, Department of Pathology.

This committee visited the Hoxsey Clinic, where the members were most courteously treated and given every facility for their investigations. Their report has been given to the House, and was tabled last month. It condemns in the most candid terms the whole of the Hoxsey Clinic, both as regards its conduct, which is entirely out of line with all proper treatment of disease as understood by modern medical science, and as regards results, which are entirely useless. There is, they allege, no proper system or method of diagnosis; no pathological examination, or proper case-taking; no follow-up of cases treated; no adequate x-ray examina-

tion, and so on. The report will no doubt be available after it has been dealt with by the Legislature.

J. H. MACDERMOT

### SASKATCHEWAN

On January 9, 1958, Medical Services Incorporated moved into their new headquarters on 2nd Avenue North in Saskatoon, the former premises having become too small for the expanding business. The new two-storey building with basement was erected at a cost of \$300,000.

The building on 3rd Avenue to be vacated has been purchased by a group of doctors. It is assumed that by April 1, the building will have been altered and changed to accommodate five separate medical practices, one dentist, one pharmacist and x-ray facilities. The new building will not be operated as a clinic.

During January, Dr. Alexander Robertson, now a lecturer in social and preventive medicine at the London School of Hygiene and formerly director of Livingstone House (general practice teaching unit), University of Edinburgh, spoke to the faculty and students of the University of Saskatchewan College of Medicine about his experience with the general practice teaching unit at the University of Edinburgh.

Dr. R. P. Sommerville was elected President of the Foam Lake and District Board of Trade at the December meeting.

It is planned in conjunction with the Canadian Cancer Society, Saskatchewan Division, to hold a cancer symposium this spring in Regina. The topics of discussion will be carcinoma of the cervix, anaemia, surgical haematuria, and radical surgical approach to intra-abdominal cancer.

Arrangements concerning speakers have not as yet been finalized but it is anticipated that prominent speakers from the United States and from other parts of Canada will be present.

A course in paediatrics and obstetrics has been planned for Regina on April 10, 11 and 12.

During January, Dr. Peter Rogatz, Medical Administrator, East Nassau Medical Group, New York City, spoke to the students and faculty at the College of Medicine of the University of Saskatchewan on the Health Insurance Plan of Greater New York.

President W. P. Thompson of the University of Saskatchewan has been named Chairman of the Ninth International Botanical Congress to be held in Montreal in 1959.

Dr. Thompson is an international authority on the genetics of cereals, especially wheat. He was for many years a member of the National Research Council.

Construction in the last decade at the University of Saskatchewan campus has exceeded 20 million dollars. More buildings were erected in that period than in the preceding 37 years since the start of the institution.

G. W. PEACOCK

### MANITOBA

Under a scholarship awarded by the National Council of Jewish Women of Canada for geriatric research, and amounting to \$500, Dr. James Morrison, deputy health officer for Winnipeg, spent two weeks of February in study in Great Britain.

Dr. J. B. Baker has been appointed medical officer for the Canadian National Railways, replacing Dr. J. Gordon Hunter, who has been promoted to Vancouver. Dr. Baker graduated in 1943 and practised in Brandon until his appointment to the C.N.R. medical staff.

Dr. Oliver Waugh, neurosurgeon, has joined the Winnipeg Clinic. His son, Dr. Douglas Waugh, has recently been appointed pathologist to the Hôtel-Dieu, Kingston, and associate professor of pathology, Queen's University Faculty of Medicine.

The Manitoba Chapter, American College of Surgeons, held its annual meeting in the Medical College, Winnipeg, on January 18. Dr. C. W. Burns was in the chair and an interesting program was presented. The election of officers resulted as follows: President, Dr. C. C. Ferguson; Vice-President, Dr. Dwight Parkinson; Treasurer, Dr. K. R. Trueman.

Recently two rural communities have honoured doctors who have given long and devoted service. At Stonewall on January 21, the friends of Dr. W. F. D. Evelyn met on the occasion of his retirement as municipal doctor. Dr. Evelyn has been at Stonewall since 1928. On television news the Hon. R. W. Bend, Minister of Health, was shown addressing the group and Dr. Evelyn cutting a lofty cake.

At Vita on January 24, the people of the district gathered to say hail and farewell to Dr. Harold V. Waldon, who has been superintendent of the United Church hospital there for over thirty years. The Christmas edition of the *Carillon News* of Steinbach carried a full-page feature article on Dr. Waldon entitled "Thirty Years a Missionary Doctor".

Dr. Arthur W. Anhalt (Dermatology) and Dr. Bernhard Fast (Internal Medicine) have joined the Winnipeg Clinic.

ROSS MITCHELL

### ONTARIO

The Women's Auxiliary of Toronto General Hospital and the Wellesley Division has presented \$10,000 to the hospital for equipment and improvements. Of the amount \$2600 has been set aside for social service work; \$2000 for the clinical investigation grant; \$1000 to a fund for special nurses for indigent patients and \$1000 for furniture for the new rehabilitation centre.

Dr. David L. Shaul and Dr. Sydney L. Wax have been appointed chairmen of the Physicians' Group for the 1958 United Jewish Appeal of Toronto. This appeal is the central fund-raising agency for 46 national, international and local organizations in the fields of welfare, health, education, overseas relief and refugee re-settlement. The amount raised in last year's drive was \$1,900,000. This year there is increased need because the State of Israel expects to absorb about 80,000

new immigrants who will arrive from areas of stress in different parts of the world.

Dr. Donald A. Smith has been appointed medical director of the firm of John Wyeth & Brother (Canada) Ltd. Dr. Smith, who has been engaged in the overseas medical service of the Department of National Health and Welfare of Canada, was formerly in general practice at Niagara Falls. A graduate of the University of Toronto, he interned at Toronto General and Sunnybrook Hospitals.

The March of Dimes has made a grant of \$20,000 each to the rehabilitation centres at Hamilton and Ottawa. The centres, to be opened this year, will provide services for amputees, sufferers of congenital disabilities, accident victims and poliomyelitis cases of all ages.

Ontario will double its capital construction grants to hospitals at a cost of about \$3,000,000 this year, bringing the provincial expenditure for this purpose to more than \$6,500,000 in 1958. Among the construction allowances are \$2000 for an active treatment bed, \$3000 for a chronic and convalescent bed, \$2000 for an intern's bed and \$2000 for a nurse's bed.

Professor R. F. Whelan of the Department of Physiology, University of Adelaide, Australia, lectured at the School of Graduate Studies, University of Toronto, on reflex control of muscle blood vessels, and on vascular responses to 5-hydroxytryptamine in man.

LILLIAN A. CHASE

The speaker at the stated meeting of the Academy of Medicine, Toronto, on February 4 was Dr. John M. Waugh, professor of general surgery, Mayo Clinic. He discussed the surgical management of carcinoma of the head of the pancreas and the ampullary area. He noted that the commonest tumour of the pancreas was a carcinoma, that 50% of pancreatic carcinomata occurred in the head and that about 25% were resectable with some hope of cure. It was often hard to tell at operation whether carcinoma had originated in the head of the pancreas or in the papilla of Vater, and a Mayo Clinic comparison of early symptoms of the two types of tumour revealed no very striking differences; 95% of patients with both types of carcinoma had lost weight, 80-90% had jaundice, and pain was an earlier and commoner symptom in carcinoma of the head, but vomiting, chills and fever were commoner in papillary carcinoma.

Dr. Waugh was against local excision of a papillary tumour, even if the lesion was very small. Transduodenal excision moreover had a high mortality (38.6%). He described the techniques of the Whipple operation and of total pancreatectomy, the latter being actually easier to do but rarely justifiable. Dr. Waugh analyzed a Mayo Clinic series of 85 cases with an over-all hospital mortality of 20%. The five-year survival rate was 27% (10 out of 47 cases traced), hence the Whipple operation was a justifiable procedure. Carcinoma of the ampulla or papilla had a better prognosis than carcinoma of the head of the pancreas. Findings in both conditions were so characteristic that if the suspected tumour was resected on clinical grounds without biopsy, this policy would rarely prove wrong.

## QUEBEC

Important appointments have been made at McGill University and its teaching hospitals. Dr. R. G. B. Gilbert has been promoted to Associate Professor and named chairman of the Department of Anaesthesia. He succeeds Dr. H. E. Griffith, who will continue his practice at the Queen Elizabeth Hospital. Dr. Griffith was made Emeritus Professor of Anaesthesia. Dr. Gilbert, who joined McGill as a demonstrator in 1948, is at present anaesthetist at the Montreal Neurological Institute, whose staff he joined in 1950.

Dr. Arnold S. V. Burgen has been appointed Deputy Director of the University Clinic and Medical Physiologist to the Montreal General Hospital. He will retain his present appointment as Professor of Physiology (part-time) at McGill. Prior to his appointment at McGill in 1949, he had held the appointment of Lecturer in Pharmacology at the Middlesex Medical School. Dr. Ian G. Milne, who for the past two years has held the appointment of Research Fellow in the University Clinic of the Montreal General Hospital, has been appointed Clinical Assistant to the Director of the Clinic and Assistant Professor of Medicine at McGill. Dr. Milne is a Montrealer and a graduate of McGill. After postgraduate work at the General, he was awarded a Nuffield scholarship, then a McLaughlin travelling fellowship and then appointed as Fellow in Medicine at the Johns Hopkins Hospital.

Dr. Louis-Philippe Bélisle, consultant radiologist for the Anti-Tuberculosis League of Montreal, has been elected president of La Société Médicale de Montréal. Other officers elected are: Dr. Jean-Paul Legault, first vice-president; Dr. Albert Royer, second vice-president; Dr. Georges Leclerc, secretary; Dr. Pierre A. Turgeon, treasurer; Dr. Gilles Leduc, assistant secretary; and Dr. Jean-Marie Rousell, councillor.

Dr. John G. Howlett, Associate Professor of Medicine at McGill University, has been appointed chief of the Department of Medicine at St. Mary's Hospital in Montreal. He succeeds Dr. Gordon J. Cassidy, who resigned to devote his time to private practice but will continue as a consultant at the hospital.

Dr. Jean-Louis Borduas, cardiologist at the Jean Talon Hospital in Montreal, has been named head of the Hospital's Medical Bureau. Others appointed to the bureau are: Dr. Violet Frost, vice-president, and Dr. Guy Duckett, secretary.

Dr. Norman Jolliffe, Director of the Nutrition Bureau, New York Department of Health, spoke to members of the Montreal Medico-Chirurgical Society on January 17 on the importance of diet in the etiology of atherosclerosis. Members of the Montreal Branch of the Quebec Society of Dietitians were specially invited. He indicated an association between the high fat diet of North Americans and people of other prosperous countries and the accelerating rate of death from coronary heart disease. The "saturated" fats from animal and dairy sources appear to be principally involved. On the other hand, the "unsaturated" fats from fish, corn, cottonseed and soy bean sources do not appear to be harmful and may actually be beneficial. He therefore advocated a change in our diet from the present 40 to 45% of calories from fats, to 25 to 30%. Further,

about half of this fat content of the diet should come from "unsaturated" fat sources.

Dr. Adélard Groulx, Director of Health for Montreal, has just issued his 1957 health report. Some features of the report may be of general interest and follow. Births reached a new high of 27 per 1000 population, namely 30,930 or 1753 more than the previous year. Infant deaths were the lowest on record, 880 per 30,390 births. Maternity deaths, 21, were the lowest in the city's history. Deaths from tuberculosis reached a new low of 116 in comparison with 133 for 1956. Only one case of diphtheria was reported; the patient recovered. There were only six cases of poliomyelitis, compared to 19 for 1956.

For the first eleven months of 1957, the McGill Alma Mater Fund received gifts totalling \$215,692 from 10,116 graduates scattered around the world. This is \$31,000 ahead of the same date last year. The London, Ont., Branch under the chairmanship of Georges Hobart, Jr., led the percentage of participation, with 59.6% of graduates in the area contributing. Trail, B.C., was next with 57.9%. The McGill Alma Mater Fund ranks among the first ten of the alumni funds on this continent in total number of contributors. It is therefore on the honour roll of the American Alumni Council—the only one in Canada.

A. H. NEUFELD

### CANADIAN ARMED FORCES

Surgeon Commander W. J. Elliot, R.C.N., Consultant Ophthalmologist, R.C.N. Hospital, Esquimalt, B.C., has been promoted to Acting Surgeon Captain.

A new hospital building has recently been opened in the Middle East. This UNEF Hospital is staffed jointly by Canadian and Norwegian medical officers and men and is situated at Rafah, Egypt.

A study group known as the Sinai Medical Society has been formed from the medical personnel in that area. This includes the Medical Officers of the UNEF, the UNRWA and the Baptist Hospital, Gaza. The purpose of this group is to exchange medical experiences and to keep up-to-date on diagnosis and treatment of disease endemic to that area.

The following R.C.A.F. Specialist Medical Officers have been promoted to the ranks indicated:

To Acting Group Captain: W. L. Orr and G. H. Graham.

To Acting Wing Commander: W. A. Young.

## FORTHCOMING MEETINGS

### CANADA

COLLEGE OF GENERAL PRACTICE OF CANADA, Second Scientific Assembly, Winnipeg, Man. (Dr. W. V. Johnston, Executive Director, College of General Practice of Canada, 176 St. George St., Toronto 5, Ont.) April 14-16, 1958.

CANADIAN FEDERATION OF BIOLOGICAL SOCIETIES (Canadian Physiological Society, Pharmacological Society of Canada, Canadian Association of Anatomists, Canadian Biochemical Society), First Annual Meeting, Kingston, Ont. (Dr. E. H. Bensley, Honorary Secretary of the Board, Canadian Federation of Biological Societies, Montreal General Hospital, 1650 Cedar Avenue, Montreal 25, P.Q.) June 7-11, 1958.

CANADIAN OTOLARYNGOLOGICAL SOCIETY (SOCIÉTÉ CANADIENNE D'OTOLARYNGOLOGIE), Annual Meeting, Halifax, N.S. (Dr. Donald M. MacRae, 324 Spring Garden Road, Halifax, N.S.) June 9-11, 1958.

CANADIAN TUBERCULOSIS ASSOCIATION, 58th Annual Meeting, Quebec City, P.Q. (Dr. G. J. Wherrett, Executive Secretary, Canadian Tuberculosis Association, 265 Elgin St., Ottawa 4, Ont.) June 9-12, 1958.

CANADIAN MEDICAL ASSOCIATION, 91st Annual Meeting, Halifax, Nova Scotia. (Dr. A. D. Kelly, General Secretary, The Canadian Medical Association, 150 St. George Street, Toronto 5, Ont.) June 15-19, 1958.

THIRD CANADIAN CANCER RESEARCH CONFERENCE, Honey Harbour, Ont. (Dr. Robert L. Noble, Medical Research Laboratory, University of Western Ontario, London, Ont.) June 15-19, 1958.

CANADIAN PSYCHIATRIC ASSOCIATION, Annual Meeting, Halifax, Nova Scotia. (Dr. A. D. Kelly, Canadian Medical Association, 150 St. George Street, Toronto 5, Ont.) June 20-21, 1958.

INTERNATIONAL FERTILITY ASSOCIATION, Windsor Hotel, Montreal, Que. (Dr. Walter W. Williams, 20 Magnolia Terrace, Springfield 8, Mass., U.S.A.) June 20-22, 1958.

INTERNATIONAL FEDERATION OF GYNÆCOLOGY AND OBSTETRICS, 2nd Congress, Montreal, P.Q. (Professor Léon Gérin-Lajoie, Suite 313, 1414 Drummond Street, Montreal, P.Q.) June 22-28, 1958.

10TH INTERNATIONAL CONGRESS OF GENETICS, Montreal, P.Q. (Mr. J. W. Boyes, General Secretary, 10th International Congress of Genetics, McGill University, Montreal, P.Q.) August 20-27, 1958.

### UNITED STATES

INTERNATIONAL SCIENTIFIC CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, U.S. AND CANADIAN SECTIONS, Los Angeles California, U.S.A. (Dr. Max Thorek, 1516 Lake Shore Drive, Chicago 10, Ill., U.S.A.) March 9-14, 1958.

AMERICAN ACADEMY OF GENERAL PRACTICE, Annual Meeting, Dallas, Texas. (Mr. Mac F. Cahal, Executive Secretary, Volker Boulevard at Brookside, Kansas City 12, Mo.) March 24-27, 1958.

CONGRESS OF INTERNATIONAL ANÆSTHESIA RESEARCH SOCIETY, New Orleans, La., U.S.A. (Dr. A. William Friend, East 107 & Park Lane, Cleveland 6, Ohio, U.S.A.) March 24-27, 1958.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Sheraton Hotel, Philadelphia, Pa., U.S.A. (Mr. E. R. Loveland, 4200 Pine Street, Philadelphia 4, Pa., U.S.A.) April 24-26, 1958.

INTERNATIONAL SOCIETY OF GASTROENTEROLOGY, 3rd World Congress, Washington, D.C. (Dr. H. M. Pollard, University Hospital, Ann Arbor, Michigan.) May 25-29, 1958.

AMERICAN MEDICAL ASSOCIATION, Annual Meeting, San Francisco, California. (Dr. George Lull, 535 North Dearborn Street, Chicago 10, Ill.) June 23-27, 1958.

### OTHER COUNTRIES

FIFTH BAHAMAS MEDICAL CONFERENCE, Nassau, Bahamas. (Dr. B. L. Frank, Organizing Physician, The Dolphin Hotel, Nassau, Bahamas.) April 1-12, 1958.

SEVENTH INTERNATIONAL CANCER CONGRESS, Royal Festival Hall, London, England. (Secretary-General, 7th International Cancer Congress, 45 Lincoln's Inn Fields, London, W.C.2, England.) July 6-12, 1958.

CONGRESS OF MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION, Bedford College, Regents Park, London, England. (Dr. Janet Aitken, 30a Acacia Road, London, N.W.8, England.) July 15-21, 1958.

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES, London, England. (Chairman, Division of Biology and Agriculture, National Research Council, 2101 Constitution Ave., N.W., Washington 25, D.C., U.S.A.) July 16-23, 1958.

THIRD INTERNATIONAL CONGRESS OF ALLERGOLOGY, Paris, France. (Dr. S. M. Feinberg, 303 E. Chicago Avenue, Chicago 11, Ill., U.S.A.) October 19-26, 1958.

## BOOK REVIEWS

**SIGMUND FREUD. Life and Work, Volume III. The Last Phase, 1919-1939.** Ernest Jones. 536 pp. Illust. The Hogarth Press, London; Clarke, Irwin & Company Limited, Toronto, 1957. \$8.00.

In this concluding volume of his biography, Dr. Jones takes up the story at the close of World War I, when Freud's major clinical contributions had already been made, and continues it to Freud's death in exile in 1939. It is a sad tale, for the last 16 years were years of continuing pain and misery that would have broken a lesser man. The mouth cancer from which Freud died began in 1923 and caused great suffering from then on, but it failed to interfere seriously with his productivity. This period is associated with some of his more controversial writings, culminating in *Moses and Monotheism*, a speculative excursion into Jewish history.

As in the earlier volumes, Dr. Jones faithfully records every detail and for this reason the biography will be invaluable as a source book for future historians who wish to make their own assessment of the principal character. The reader may feel that the long account of the dissension with Otto Rank is somewhat tedious, but it is no doubt all necessary to a proper understanding of the relationships between Freud and his disciples. After his record of Freud's day-to-day life, Dr. Jones includes a series of chapters covering various aspects of his hero's work during the last 20 years, in relation to such subjects as biology, anthropology, sociology, religion and occultism. He also sets out in detail Freud's favourable attitude to lay analysis summed up in his opposition to "the obvious American tendency to turn psycho-analysis into a mere housemaid of psychiatry". Finally, Dr. Jones attempts to sum up the influence of Freud's work on the world in general—an almost impossible task, as he recognizes.

In conclusion, one can only repeat that these three masterly volumes are indispensable reading for any serious student of psychoanalysis.

**CLINICAL GASTROENTEROLOGY.** Eddy D. Palmer, Lieut.-Col., Medical Corps, United States Army. 630 pp. Illust. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York, 1957. \$18.50.

This book is welcomed as a practical guide to digestive-tract disorders. The subject matter has been carefully selected to give a true perspective of this vast specialty. The various topics are discussed in a lucid, discriminating way with the authority of considerable experience. The author, who is a consulting gastroenterologist in the United States Army, has made important contributions to the endoscopic study of the oesophagus and stomach. The chapter on upper gastro-intestinal bleeding reflects his original thinking and is of considerable interest. He advocates a vigorous diagnostic approach in cases of severe hæmorrhage, including oesophagoscopy, gastroscopy and fluoroscopy immediately after admission to hospital. This is the rational and ideal approach if a gastroenterologist is available. Colonel Palmer carries the thesis of the pre-eminence of psychological factors in the causation of duodenal ulcer to the logical but startling conclusion that the patient with an uncomplicated ulcer should be treated only by psychotherapy and that diet, restriction of tobacco, and medication are of no real value. Similar views are expressed on the subject of ulcerative colitis. These aberrations are exceptional, but illustrate that the book is provocative

and should be read critically. The many illustrations are of excellent quality and the publishers have produced a very handsome but rather expensive book. It should have a wide appeal to physicians and surgeons.

**BRAIN MECHANISMS AND DRUG ACTION.** Edited by William S. Fields, Baylor University College of Medicine, Houston, Texas. 147 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$4.75.

This book contains the symposium held by the Houston Neurological Society in 1956. In this field in which progress is being made so rapidly, authoritative books covering the entire subject are rare or non-existent. Symposia such as this one, in which several authorities, active in the field, present their data, theories and results, can therefore offer a good cross-section of the current trends in a rapidly expanding area of research.

There is an excellent summary of the neurophysiology of the reticular formation by Dr. Livingston of the University of California. Papers by Himwich and Rinaldi, and by Marrazzi, give excellent presentations of the respective research, frames of reference, and techniques of these authors, while the Drs. Killam deal with pharmacological and neurophysiological correlates of the action of some of the newer drugs on the central nervous system. Dr. Guillemin deals with neurohormonal aspects of the response of the pituitary-adrenal axis to centrally acting drugs and to "stress" while Dr. Brady's paper outlines behavioural studies and operant-conditioning experiments. Discussion follows each paper.

This book can be recommended to neurophysiologists, psychiatrist, neurologists, and to all interested in current developments in drug action and brain mechanisms, for it offers a cross-section of experimental work, relevant ideas and theories associated with several of the important current contributions to research in neurophysiology and behavioural aspects of brain mechanisms.

**BILATERAL POLYCYSTIC DISEASE OF THE KIDNEYS: A Follow-up of 284 Patients and Their Families.** O. Z. Dalgaard, Copenhagen University. 255 pp. Illust. Ejnar Munksgaard, Copenhagen, 1957. Dan. Cr. 29.00.

Polycystic disease is one of the most important developmental disturbances of the kidney. While the clinical aspects of the condition have been reported by many, the hereditary aspects of the disease have not commanded much investigation. Dr. O. Z. Dalgaard carried out a genealogical investigation of 242 patients with proved polycystic renal disease and in addition traced the family members of 232 of this group. The results of this herculean task are embodied in the present monograph.

The theme of the work is primarily biological rather than clinical. Approximately one-quarter of the 250-page monograph is directly given over to the clinical aspects of the condition. The author reviews the incidence, etiology, pathology and pathogenesis of the condition but stresses the biological aspects of these subjects. Several chapters are devoted exclusively to genetics. An extensive bibliography is included and the material contains in addition 35 tables and 39 figures, the latter including x-ray reproductions.

The monograph will have a limited appeal because of its highly technical and scientific nature. Information of some practical value is contained in the chapter devoted to this aspect, but the biologist would find the book of most value. The summary at the end satisfactorily condenses the material.

**THE MEDICAL INTERVIEW, A Study of Clinically Significant Interpersonal Reactions.** Ainslie Meares, Melbourne, Australia. 117 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$3.75.

It is said that at a hospital in Boston, the experiment was tried of having patients interviewed by senior medical students and also by senior arts students. To everyone's astonishment, the senior arts students elicited more information from the patients concerning emotional and social problems relevant to their illnesses than did the medical students. This would suggest that there is a need for medical students to know more about the medical interview. The little book by Dr. Meares is designed to give help in interviewing patients who bring a problem rather than a symptom to the physician, or who bring some symptom which is speedily seen to be secondary to a problem. In it, the author discusses the motivations of the patient and the physician in the interview, the use of the first interview by the patient to assess the physician while rapport is being established, the aid that non-verbal communication can give (such factors as the arrangement of the office, the physician's style of dress, the handshake, the offer of a cigarette are discussed) and the nature and establishment of rapport. Passivity, hostility, abreaction and suggestion in the medical interview are dealt with, and then the important psychological effects of a physical examination are discussed. One of the most interesting chapters in the book is that on silence—its nature, its use as a defence, its association with serenity, and its meaning.

This is decidedly a book for study by any general practitioner, who will be grateful for the clarity of expression and practical approach revealed in it.

**HOSPITAL ACCREDITATION REFERENCES.** American Hospital Association. 136 pp. The American Hospital Association, Chicago, Ill., 1957. \$3.50.

This neat little volume will be found a very useful handbook on the principles and procedures required for hospital accreditation. It is a systematic compilation of accreditation literature containing essential data about the "Standards", the "Principles" for medical staff government, and certain explanations of accreditation requirements as published in various Bulletins by the Joint Commission on Accreditation of Hospitals. It contains some further information from articles in hospital periodicals and it publishes for the first time Commission rulings made in reply to specific enquiries—rulings which have been available previously to a very limited audience only. Hospitals will find very valuable the many samples of specific information required on a surveyors' questionnaire. The history as given, although remarkable for its brevity, does make mention of the great contribution by the late Dr. Malcolm MacEachern who guided the program's destinies for nearly thirty years.

In the preface Dr. Crosby states:

"The American Hospital Association, with other member organizations of the Joint Commission on Accreditation of Hospitals, believes the accreditation program is one of the most useful instruments yet devised for improving hospital care. The accreditation program is influential and has become a potent force in encouraging good hospital care."

This handbook should help to make the accreditation program a still more "useful instrument" by making the aims and objects of the program more conveniently

available to the constantly growing and increasingly interested audience of hospital trustees, administrators and medical and ancillary professional staffs. One could have wished for a more comprehensive volume such as would have resulted in a complete revision of the *Manual of Hospital Standardization*, last published by the American College of Surgeons in a limited circulation in 1946; but perhaps this tidy little book, though less comprehensive, will prove to be more widely read and more frequently used as a reference.

**GYNECOLOGIC SURGERY AND UROLOGY.** Thomas L. Ball, Cornell University Medical College and The New York Hospital, New York. 547 pp. Illust. The C. V. Mosby Company, St. Louis, 1957. \$20.00.

This excellent book on gynaecological surgery and environmental associated surgery is complete, comprehensive and unique. It is the type of up-to-date, recognized material which has not been seen in book form in this field during recent years. All of the important newer forms of surgical and allied forms of treatment have been grouped together and presented in a manner acceptable to most of the leading medical schools. Only the worth-while procedures are included. Surgical anatomy and operative steps are accurately described and beautifully illustrated. The chapters dealing with urinary incontinence, fistulas and bladder surgery, and malignant tumours, radiation and radical surgery are all masterly treatises on these important subjects.

In the reviewer's opinion this book would be invaluable to those who are, or are in training to be, specialists in this field.

**OPERATIVE SURGERY, Vol. IV.** Edited by Charles Rob, St. Mary's Hospital, and Rodney Smith, St. George's Hospital, London. 391 pp. Illust. Butterworth & Co. (Canada) Ltd., Toronto, 1957. \$19.50.

Volume IV continues the series on operative surgery with the same excellent format and general clear style of previous volumes. This book is divided into three parts. The first deals with surgery of the head and neck, with special emphasis on cervical lymph node surgery. This is one of the best expositions of the subject the reviewer has seen. The drawings are excellent and due emphasis is placed on complications and pitfalls which all surgeons will appreciate.

The second section is devoted to vascular surgery. This includes surgery of the sympathetic nervous system and the surgery of veins. Included in this section is material on varicose veins, gravitational ulcers and ligation of the inferior vena cava amongst others. Arterial surgery comprises the remainder of this chapter with some 80 pages on the numerous aspects of this rapidly expanding field. Finally, small sections deal with the operations for lymphoedema and other procedures for peripheral vascular occlusions.

The third section is restricted to endocrine glands. This includes thyroid, parathyroid and thymus gland surgery. Also included is a subsection on pituitary gland surgery and an excellent review of the surgery of the adrenal gland.

Volume IV is written in the same concise manner as the preceding volumes and will make a worthwhile addition to any surgeon's library.

(Continued on page 384)



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(Continued from page 382)

**SELEKTIVE LUNGENANGIOGRAPHIE IN DER PRA-OPERATIVEN DIAGNOSTIK UND IN DER INNEREN KLINIK** (Selective Pulmonary Angiography in Preoperative Diagnosis and Internal Medicine). Wilhelm Bolt, University Medical Clinic, Cologne; Werner Forssmann, Bad Kreuznach; and Hans Rink, Rhine Provincial Hospital, Marienheide. 199 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1957. \$12.85.

This excellent monograph gives a comprehensive discussion of selective catheterization of the pulmonary circulation by a team of researchers led by the Nobel Prize winner, Werner Forssmann, whose auto-experiment made cardiac catheterization possible and opened a new era in investigation of cardiac disorders, out of which the present-day cardiac surgery developed. The physiology and pathology of the lesser circulation is thoroughly explored by the application of selective angiography to different segments of the lungs. This is done by direct catheterization of a given segment of the pulmonary circulation and subsequent injection of contrast material under fluoroscopic control, with films taken by means of a spot-filming device. The views thus obtained make a fascinating study. This book is the result of over 2000 investigations in which cases of pulmonary disorders and of congenital and acquired heart lesions were studied. A separate chapter deals with angiopulmonary studies of the post-operative lung and with the changes following pleuritic processes which resulted in obliteration of the pleural space. The study of the angiographic findings in various forms of emphysema makes very interesting reading. An attempt is made to correlate the findings in selective pulmonary angiography with those obtained through the inhalation of radioactive xenon 133 and subsequent thoracography.

The contents cover well the history of cardiac catheterization, the principles of pulmonary angiography, indications, technique, topography of pulmonary circulation and, in great detail, the pathological manifestations of different pulmonary and cardiac disorders as demonstrated in the pneumoangiogram.

An extensive list of world literature covering the entire field of pneumoangiography is also given.

This book is very well written and makes good reading. Its illustrations are superb. It represents a most useful adjunct for anyone interested in pulmonary and cardiac pathology.

**IT PAYS TO BE HEALTHY.** Robert Collier Page, New York. 285 pp. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1957. \$4.95.

There is a good deal of commonsense health advice for the layman in Dr. Page's book; and there is also much that practising physicians will dismiss as superficial, if not naïve. Unfortunately the promise held out by the author in his excellent 16-page introductory essay, "How to understand the health hazards of working for a living", is not entirely realized in the body of the book.

Taken as a whole, *It Pays To Be Healthy* is a mixture of medical horse-sense (with psychiatric overtones) and a Horatio Alger-like expression of faith in the American dream. There seems to be considerable ambivalence on the part of the author as between a blind faith that you, too, can become president of your company—provided you preserve your health—and the much sounder point of view that health comes to him who

learns his limitations and accepts the necessity of living within them. Part of the confusion can undoubtedly be laid at Dr. Page's publishers' door and their desire to present in a single volume advice that will be equally meaningful to the chairman of the board and the sweeper of the floor. It is doubtful that this could ever be done successfully.

Dr. Page's technique of narrating case histories to illustrate points in every chapter certainly enhances the readability of the book. There are many good elements throughout; but the level of understanding seems uneven, and too often the author fails to penetrate to the heart of one topic before he slips on to the next. This tends to make the book at once both provocative and provoking, attractive and disappointing, true in many parts and yet not wholly true. It doesn't go far enough and deep enough; but perhaps this could be a useful beginning.

Special gratitude is due to the author of the term "constructive medicine", which is a happily positive alternative to the familiar, but negative "preventive medicine".

**KRAEPELIN UND FREUD** (Kraepelin and Freud). Kurt Kolle, Departments of Psychiatry and Neurology, University of Munich. 88 pp. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1957. \$1.80.

This monograph was intended by its author to acquaint younger colleagues with the era of Kraepelin and Freud, i.e. a period in which present-day psychiatry was first moulded. For the older psychiatrists this period is still memory rather than history, according to the author. The introductory chapter discusses problems of psychiatry since 1900, with Kraepelin and Freud as focal points. These two key figures are then presented in two separate chapters, each divided into sections dealing respectively with their life history, personalities, significance as teachers and scientists and their doctrine. Kraepelin is presented as a sharp, practical and thorough clinician, always in touch with a large number of patients, seeing however the "disease" rather than the sick individual. Freud, according to Kolle, was essentially a philosopher whose point of departure was the individual, but who lost himself more and more in speculative "metaphysics", particularly in his later life.

The author attended Kraepelin's lectures as a student. He is now professor of psychiatry in Munich, holding the chair Kraepelin had in his later years. This first-hand knowledge makes his biography of Kraepelin authentic and adds a lifelike freshness and directness to his presentation. The chapter on Freud, however, is based essentially on literature. Regarding psychoanalytic doctrine, Kolle remarks that the attitude of present-day psychiatrists is not "harsh rejection any more, but friendly criticism". A similar ambivalence or shift of attitude is reflected in Kolle's present discussion of the matter. The historical perspective of the development of psychiatry as a whole, in which Kraepelin and Freud were chief dramatis personae, is an exclusively German one in this double biography with only German literature quoted among the references. This regional outlook is the chief limitation of this volume. For the general reader it is recommended as a source-book on Kraepelin only.

(Continued on page 386)

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## RECENT REFERENCES

- Engelberg, H., Simplified Heparin Therapy of Impending and Acute Myocardial Infarction, *Ann. Int. Med.*, **44**, 466, 1956.  
Crane, C., Deep Venous Thrombosis and Pulmonary Embolism, *New Eng. J. Med.*, **257**, 147, 1957.



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*(Continued from page 384)*

**PHYSIOLOGY OF THE NERVOUS SYSTEM.** E. Geoffrey Walsh, Department of Physiology, Edinburgh University. With chapters on Somatic Sensibility and the Applied Physiology of Pain by John Marshall, Edinburgh University. 563 pp. Illust. Longmans, Green and Co. Ltd., London, England; J. B. Lippincott Company, Montreal, 1957. \$9.00.

Intended for the medical student and physician who requires a knowledge of neurophysiology to understand his patients, this volume is written with a strong clinical bias, and relatively little space is devoted to the fundamental biophysics involved in nerve or muscle physiology. However, throughout the volume there are adequate explanations of the basic principles involved. The organization of the material shows an appreciation of the problems encountered by the practitioner. Instead of the usual divisions, the chapters have been organized on a functional basis. For example, in one chapter the total activity (both sensory and motor) of the spinal cord is considered, followed by reflex activity and synaptic activity. In the next chapter the author discusses the problems of posture and labyrinthine function; this of necessity involves an adequate discussion of the stretch reflex and other postural reflexes. Adequate space is given to each of the special senses, which are not considered as discrete entities, but as a functioning unit in conjunction with the other portions of the nervous system. The final chapter gives an account of the present state of knowledge in the rapidly expanding field of hypothalamic and rhinencephalic function and their interactions.

The text is clear and concise and is provided with an adequate number of good illustrations. From the point of view of pure neurophysiology there are shortcomings, but for the practising physician or medical student this volume provides an excellent background for the comprehension and understanding of clinical neurology.

**PRACTICAL CLINICAL PSYCHIATRY.** Jack R. Ewalt, Harvard Medical School; Edward A. Strecker, University of Pennsylvania Medical School; and Franklin G. Ebaugh, University of Colorado School of Medicine. 457 pp. 8th ed. McGraw-Hill Company of Canada Limited, Toronto, 1957. \$8.40.

The eighth edition of this book measures up to the quality of its predecessors, and some of the changes are in an improvement on the original texts. As stated in the preface, the book is intended for the medical student, the physician in practice and the doctor who is beginning to train in psychiatry. There is an increased emphasis upon the analytical point of view and, in this respect, some of the terminology may not be completely comprehensible. Also, the acceptance of the analytical theories may tend to mislead the readers for whom the book is intended into thinking that there is no other approach to psychiatric problems. This is counteracted to some extent by the recognition and presentation of physiological and neurological studies in the field of psychiatry.

The book is conveniently divided into three sections, the first section dealing with more theoretical material, the second section dealing with a symptomatic description of psychiatric illnesses, and the third section with the various treatments used in mental disorders. The book has followed throughout the official classification of the American Psychiatric Association, and this would seem to have considerable advantages in spite of the inadequacies of the classification, which are recognized.

On the whole, the book is quite well written and well organized. It is easy to read and, while one might disagree with some of the ideas expressed, they are expressed quite clearly. The book would be recommended reading for any student of psychiatry.

**WORLD DIRECTORY OF MEDICAL SCHOOLS.** 314 pp. 2nd ed. World Health Organization, Palais des Nations, Geneva, Switzerland; The Ryerson Press, Toronto, 1957. \$5.00.

The second edition of the *World Directory of Medical Schools* is a great improvement on the first. Any gaps in the information given in the former edition have now been filled, and some anomalies put right. Moreover, the scope of the present edition has been considerably enlarged, for instead of simple tabulation of details about medical schools, there is now an excellent description of the general educational system and the main features of undergraduate medical education in each country. In addition, useful items such as the population of the country, the ratio of medical graduates to population, and the number of medical graduates per annum have been added. These data are summarized by continent, and world totals are also provided. This is now a unique and most valuable work of reference.

**CLINICAL ASPECTS OF ARTERIOSCLEROSIS.** Seymour H. Rinzler, Associate Physician, Beth Israel Hospital, New York. 339 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$9.50.

So much has been written about the pathogenesis of arteriosclerosis that it is refreshing to have a book devoted to the clinical side of the problem, to the symptomatology and treatment. An introductory chapter considers briefly current ideas as to etiology, pathogenesis and the relation of diet, hypertension, heredity, etc., to its development. It is a particularly useful review of background material. Most of the text is concerned with the cardiac, cerebral and peripheral vascular manifestations of arteriosclerosis, but other less often involved organs are not neglected. Because this subject touches on so many fields of medicine, the discussion at times must necessarily be short. Ample coverage is given to the great variety of tests which have been devised to aid in diagnosis.

One might disagree with some of the concepts set forth. It is implied that a diagnosis of angina may be made on grounds other than those of history, by such aids as exercise tests. Surely angina is diagnosed only by history, whatever aid one may get from tests which reveal decreased coronary flow. Unfortunately the most recent and important evaluation of the Master exercise test by Robb and Mattingley was published too late for inclusion. Considering their importance, one might have expected more detailed descriptions of the clinical picture in angina and myocardial infarction. No evaluation of the usefulness of norepinephrine in cardiogenic shock is made. The dangers of the intravenous use of trypsin to dissolve clots are insufficiently emphasized.

In spite of the wealth of material and the extensive list of references, mostly to American literature, one wishes that the author had expressed personal opinions about the value of various tests and methods of treatment, most of which are described without comment. Regardless of the above criticisms, this volume is a useful reference work and worthy of perusal.

*(Continued on advertising page 54)*

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## Books Received

Books are acknowledged as received, but in some cases reviews will also be made in later issues.

**Nierenkrankheiten: Physiologie, Pathophysiologie, Klinik und Therapie (Renal Disorders: Their Physiology, Clinical Features and Therapy).** Hans Sarre, Freiburg. 540 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1958. \$14.05.

**Angiographie der Nieren (Renal Angiography).** Erich Volger and Rudolph Herbst, Graz. 112 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1958. \$11.85.

**Rhythmusstörungen des Herzens: Systematik, Ursache und Klinische Bedeutung, Therapie (Disturbances of Cardiac Rhythm: Classification, Cause and Clinical Significance, Therapy).** Konrad Spang, Heidelberg. 548 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1957. \$35.25.

**Die Geburtshilflichen Operationen: Ihre Ausführung und Anwendung (Obstetric Operations: Their Technique and Application).** Heinrich Martius, Göttingen. 281 pp. Illust. 8th ed. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1958. \$7.05.

**Fieber, Unspezifische Abwehrvorgänge, Unspezifische Therapie (Fever, non-specific defence mechanisms, non-specific therapy).** Ferdinand Hoff, Frankfurt. 145 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1957. \$3.35.

**Manual of Pharmaceutical Law.** William Pettit, University of Pittsburgh, Pa. 303 pp. 2nd ed. The Macmillan Company, New York, 1957. \$4.50.

**Principles of Gynaecology.** T. N. A. Jeffcoate, Professor of Obstetrics and Gynaecology in the University of Liverpool, England. 669 pp. Illust. Butterworth & Co. (Canada) Ltd., Toronto, 1957. \$15.00.

**Burns: Pathology and Therapeutic Applications.** Simon Sevtitt, Consultant Pathologist to the Birmingham Accident Hospital and Medical Research Council Burns Research Unit, England. 364 pp. Illust. Butterworth & Co. (Canada) Ltd., Toronto, 1957. \$7.50.

**Autonomic Imbalance and the Hypothalamus. Implications for Physiology, Medicine, Psychology and Neuropsychiatry.** Ernst Gellhorn, Professor of Neurophysiology, University of Minnesota, Minneapolis, 300 pp. Illust. University of Minnesota Press, Minneapolis; Thomas Allen, Limited, Toronto, 1957. \$9.25.

**Praktische Winke für das Klinisch-Chemische Routinelaboratorium (Practical Hints in Routine Clinical Chemistry).** Heinrich Südhof, Göttingen. 83 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1958. DM 7.80.

**Symposium on Diseases and Surgery of the Lens.** Edited by George M. Haik, Louisiana State University School of Medicine, New Orleans. 260 pp. Illust. The C. V. Mosby Company, St. Louis, Mo., 1957. \$10.50.

**Mycopathologia et Mycologia Applicata. Vol. VIII, Fasc. 3, September 1957.** 248 pp. Illust. Dr. W. Junk Publishers, The Hague, Netherlands, 1957.

**Current Contents of Pharmaceutical Publications.** November 15, 1957. Eugene Garfield Associates, Philadelphia, Pa.

**Morphologie und Physiologie des Nervensystems (Morphology and Physiology of the Nervous System).** Paul Glee, Oxford. 445 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1957. \$13.80.

**Eisen, Kupfer und Eiweiss am Beispiel der Leberkrankheiten (Iron, Copper and Proteins as Exemplified in Liver Disorders, with Special Reference to Haemochromatosis and Hepatolenticular Degeneration).** J. Lange, Bonn. 89 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1958. \$3.20.

**Kleine Orthopädie: Grundriss für Unterricht und Praxis (Elementary Orthopaedics: A Basic Text for Students and Practitioners).** Gerhard Exner, Marburg. 129 pp. Illust. 2nd ed. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1958. \$2.35.

**Atlas d'Anatomie Stéréotaxique (Atlas of Stereotaxic Anatomy).** J. Talairach and others. 294 pp. Illust. Masson et Cie, Paris, 1957. Paper covers Fr. fr. 9,000; Linen binding Fr. fr. 10,000.

**L'Encéphalographie Fractionnée (Fractional Encephalography).** Giovanni Ruggiero. 510 pp. Illust. Masson et Cie, Paris, 1957. Fr. fr. 13,500.

**The Healing of Wounds.** Edited by Martin B. Williamson, Loyola University, Chicago. 202 pp. Illust. McGraw-Hill Company of Canada Limited, Toronto, 1957. \$7.35.

**Cardiovascular Rehabilitation.** Edited by Paul Dudley White, Howard A. Rusk, Bryan Williams and Philip R. Lee. 155 pp. McGraw-Hill Company of Canada Limited, Toronto, 1957. \$6.83.

**Brain Tumors: Their Biology and Pathology.** K. J. Zülch, University of Cologne; translated by Alan B. Rothballer, Albert Einstein College of Medicine, New York, and Jerzy Olszewski, University of Saskatchewan, Saskatoon. 308 pp. Illust. American edition based on the 2nd German edition. Springer Publishing Company, Inc., New York, 1957. \$9.50.

**Typhoid Vaccine: Vi antigen and Vi antibody.** Acta Pathologica et Microbiologica Scandinavica, Supplementum 123. Jörn Spaun; translated from the Danish by Elisabeth Aagesen. 79 pp. Ejnar Munksgaard, Copenhagen, 1957.

**Lehrbuch der Roentgenologischen Differentialdiagnostik: Band I: Erkrankungen der Brustorgane** (Textbook of Roentgenological Differential Diagnosis: Vol. I: Diseases of the Chest). 1183 pp. Illust. 4th ed. Werner Teschendorf, Köln. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1958. D.M. 210.

**Clinical Electrocardiography: The Spatial Vector Approach.** Robert P. Grant, National Heart Institute, National Institutes of Health, Bethesda, Md. 225 pp. Illust. McGraw-Hill Company of Canada Limited, Toronto, 1957. \$7.88.

**Medical History of the Second World War: Army Medical Services—Campaigns, Vol. II.** F. A. E. Crew. 537 pp. Illust. Her Majesty's Stationery Office, London, 1957. 84s.

**Tumor Surgery of the Head and Neck.** Robert S. Pollack, Stanford University School of Medicine, California. 101 pp. Illust. Lea & Febiger, Philadelphia; The Macmillan Company of Canada Limited, Toronto, 1957. \$5.00.

**The Forequarter Amputation.** H. F. Moseley, Hunterian Professor, Royal College of Surgeons of England; Assistant Professor of Surgery, McGill University, Montreal. 79 pp. Illust. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Limited, Toronto, 1957. \$7.15.

**Aortography: Its Application in Urological and Some Other Conditions.** W. Barr Stirling, Senior Assistant, Urological Department, Glasgow Royal Infirmary, Scotland. 292 pp. Illust. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Limited, Toronto, 1957. \$8.50.

**Comparative Physiology of the Nervous Control of Muscular Contraction.** Cambridge Monographs in Experimental Biology, No. 8. Graham Hoyle, Lecturer in Zoology and Comparative Physiology, University of Glasgow, Scotland. 147 pp. Illust. Cambridge University Press, England; The Macmillan Company of Canada Limited, Toronto, 1957. \$2.50.

**Clinical Application of Hormone Assay.** John A. Loraine, Edinburgh University, Scotland. 368 pp. Illust. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Limited, Toronto, 1958. \$5.00.

**A Mental Health Handbook.** Ian Skottowe, Psychiatrist, The Warneford and Park Hospitals, Oxford, England. 196 pp. Edward Arnold (Publishers) Ltd., London; The Macmillan Company of Canada Limited, Toronto, 1957. \$3.60.

**Hospital Accreditation References.** American Hospital Association. 136 pp. The American Hospital Association, Chicago, Ill., 1957. \$3.50.

**Dental Practitioners' Formulary 1957: For use in the National Health Service.** 49 pp. The British Medical Association and the Pharmaceutical Press, London; Jefferson Press, Toronto, 1957. 3s. (plus postage)

**Adventures in Medical Education. A Personal Narrative of the Great Advance of American Medicine.** G. Canby Robinson, Emeritus Lecturer, School of Medicine, Johns Hopkins University, Baltimore, Md. 338 pp. Illust. Published for The Commonwealth Fund by Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1958. \$6.50.

**Doctor and Patient in Soviet Russia.** Mark G. Field, Department of Social Relations, Harvard University, Cambridge, Mass. 266 pp. Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1958. \$5.25.

**Chronic Illness in the United States. Vol. IV: Chronic Illness in a Large City. The Baltimore Study.** Commission on Chronic Illness. 620 pp. Published for The Commonwealth Fund by Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1958. \$8.80.

**The Student Physician: Introductory Studies in the Sociology of Medical Education.** Edited by Robert K. Merton, George Reader and Patricia L. Kendall. 360 pp. Published for The Commonwealth Fund by Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1957. \$5.50.

**Psychosomatic Ophthalmology.** T. F. Schlaegel, Jr., Indiana University School of Medicine, Indianapolis, with the collaboration of Millard Hoyt. 523 pp. The Williams & Wilkins Company, Baltimore; Burns & MacEachern, Toronto, 1957. \$11.50.

**Particulate Clouds: Dusts, Smokes and Mists: Their Physics and Physical Chemistry and Industrial and Environmental Aspects.** H. L. Green and W. R. Lane. 425 pp. Illust. E. & F. N. Spon Ltd., London; McClelland & Stewart Limited, Toronto, 1957. \$14.00.

**Fundamentals of Electrocardiography and Vectorcardiography.** Lawrence E. Lamb, Air University, School of Aviation Medicine, USAF Randolph Air Force Base, Texas. 142 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$10.50.

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PICKWICK, S., *Textbook of Medicine*, Jones and Jones, London, 1st ed., p. 30, 1955.

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**RARE BOOKS.**—OLD MEDICINE, early editions of Astruc, Banting, Beaumont, Bernard, Boerhaave, Celsus, Deventer, Dionis, Freud, Haller, Leeuwenhoek, Nightingale, Osler, Pasteur, Sydenham, etc. Catalogues on Old Medicine, Canadiana, Arctica, on request, Bernard Amtmann, Bookseller, 750 Sherbrooke Street West, Montreal, Quebec.

## Positions Wanted

**LOCUM WANTED** in Toronto or environs commencing early July by British graduate (1950). Extensive postgraduate experience. British and Canadian references available. Please reply to Box 619, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**GENERAL SURGEON**, fellowship eligible, three years' experience in thoracic surgery and bronchoesophagoscopy, desires association with a surgeon, clinic or group, or industrial post. Reply to Box 614, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**DOCTOR**, nine years' experience in general practice and anaesthetics, eligible for anaesthetic certification, seeks suitable anaesthetic opening with or without general practice. Reply to Box 620, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**SURGEON.**—Canadian, F.R.C.S.(Canada), age 37 years, married. Qualified thoracic, general, urology, all endoscopies. Interested research; teaching. Desires post with hospital, institution, surgeon, clinic, group or industrial. Reply to Box 621, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**GENERAL SURGEON**, F.R.C.S.(England), certified in general surgery, L.M.C.C., seeks association with surgeon, group or clinic. Qualified 14 years, good experience, age 36 years. Reply to Box 622, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**LOCUM TENENS** wanted for May in Ontario or Maritimes by McGill graduate. Has served rotating internship and now doing residency in internal medicine. Write to Box 624, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**ADMINISTRATIVE OR COMPANY** post required by 32 year old medical practitioner with seven years' experience in surgery, general practice and hospital administration. Pharmaceutical or insurance company or hospital administrative post preferred. Willing to work anywhere in Canada or the United States. At present in active practice in Canada. Write to Box 591, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**ORTHOPÆDICS AND TRAUMATOLOGY.**—Canadian medical graduate, age 33 years, married. Two years' general practice, two years' general surgery and three years' orthopaedic residency. Eligible to sit for American Boards in April and Canadian Fellowship in October. Available July 1958. Interested in Canada and United States. Reply to Box 573, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**CERTIFIED UROLOGIST**, Canadian born and graduate, desires association with established urologist, general clinic, or location in receptive community. Fellowship eligible, experienced, age 36 years, United Church, married, English descent. Reply to Box 564, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**LOCUM WANTED** June to August inclusive by certified surgeon. Extensive experience, surgery, obstetrics and general practice. Southern Ontario preferred. Reply to Box 612, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**RESIDENCY OR PRECEPTORSHIP** in surgery or training association with established surgeon or clinic. Age 35 years, married, two children. Seven years' experience in general practice work. Prefers Western Canada, Alberta or British Columbia. Large obstetric experience—limited surgery. Reply to Box 543, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

(Continued on page 46)



## NEW B-D STERILE DISPOSABLE BLOOD LANCET

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avoids premature closure—  
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of penetration. The angle  
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that incision is in the region  
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**result**—easier penetration—  
fewer tactile corpuscles  
traumatized—minimal pain.

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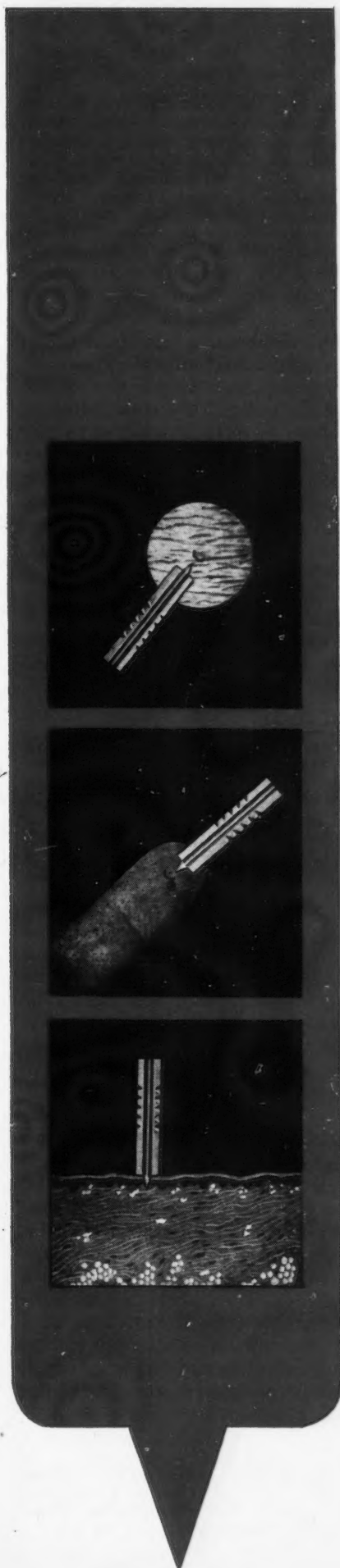
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**B-D**

## BOOK REVIEWS

(Continued from page 386)

**1957 MEDICAL PROGRESS: A Review of Medical Advances during 1956.** Edited by Morris Fishbein, University of Illinois College of Medicine, Chicago, 367 pp. McGraw-Hill Company of Canada Limited, Toronto, 1957. \$6.30.

This is the fifth volume in the series; it covers the field of medicine in a very wide sense, including such subjects as cardiovascular diseases, obstetrics, ophthalmology, nutrition, newer drugs, and laboratory procedures, to mention only a few of the topics discussed. Men outstanding in their field have been selected to discuss the subjects chosen. One can unhesitatingly state that rarely has so much ground been covered in such limited space. Each section is supported with a long reference list, numbering as high in one instance as 235. This review has the usual drawback of being outdated before it is published. Nevertheless it certainly supplies a good coverage of the wide field attempted.

**MANAGEMENT OF THE PATIENT WITH HEADACHE.** Perry S. MacNeal, Bernard J. Alpers, and William R. O'Brien, Benjamin Franklin Clinic, Philadelphia, and Jefferson Medical College. 145 pp. Lea & Febiger, Philadelphia; The Macmillan Company of Canada Limited, Toronto, 1957. \$3.50.

This book attempts to state the present thinking on the subject of the patient with headache in clear terms which will aid in the diagnosis and management of this condition. The authors devote a fairly large section to discussing the psychological mechanisms of pain, and in so doing give almost a short course in psychoanalysis. The mechanism of vascular headache, "Horton syndrome", and menopausal headache are all discussed adequately and too much controversial matter is not introduced. The differential diagnoses were adequate for quick review. From the point of view of therapy, there appears to be a critical evaluation of the methods for the control of headache. This is a short and concise discussion of this almost ever-present symptom, which should be of value particularly to the family physician.

**GYNECOLOGIC THERAPY.** William Bickers, 158 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$4.75.

This is a very readable book set out in a condensed form which will appeal to the medical student, intern and

general practitioner, but without illustrations or bibliography. The material is logically presented and the chapters on sterility, hirsutism and intersexuality, leukorrhœa and the climacteric are especially commendable. Controversial points of view are avoided, and the reviewer was sometimes disappointed by the author's categorical approach. Moreover, in certain instances he would disagree with the author's statements—the incidence of

tuberculous endometritis in routine sterility investigation is given as five per cent; and again, the handling of missed abortion and the use of so-called substerilizing doses of radium in the treatment of membranous dysmenorrhœa will not find general agreement.

On the whole, the book generally does fulfil its function and will serve as a useful reference for those for whom it is intended.

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when  
other therapy  
fails

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ulcers  
burns  
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1. Kline, P. R., and Caldwell, A.: New York St. J. M. 52:1141, 1952.
2. Schoch, H. G.: The Schoch Letter, May 1952.
3. Welch, A. L. and Ede, M.: A.M.A. Archives Derm. & Syph., June 1954.
4. Boggan, W. H. and Labecki, T. D.: Clin. Med., May 1954.
5. Kline, P. R.: Current News in Derm. & Syph., May 1952.



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**LECTURE NOTES ON THE USE OF THE MICROSCOPE.** R. Barer, University Demonstrator in Anatomy, University of Oxford. 76 pp. Illust. 2nd ed., Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. \$1.75.

This little book, now in its second edition, fills a real need in the training of medical students and others who have frequent occasion to use the ordinary optical microscope. As the author points out in the preface,

few medical students receive adequate instruction in the use and care of the instrument, and even senior investigators may fail to use the microscope to best advantage because of ignorance of its construction and optical principles. The author attempts to remedy this defect by setting out in a simple and concise manner the optical theory of the instrument, how to set it up for most effective use, and how to clean and take care of it.

In this he has been successful; he has produced a very readable book which contains the information essential to the proper use and understanding of the microscope, yet is so short that even the busiest student would not grudge the time taken to read it.

**EMERGENCIES IN GENERAL PRACTICE** (Specially commissioned articles from the *British Medical Journal*, January 1955 to June 1956). 470 pp. Illust. British Medical Association, London, 1957. 25s.0d.

This book, containing a selection from the series of articles published in the *British Medical Journal* in 1955 and 1956 under the heading "Emergencies in General Practice" covers an imposing array of subjects of interest to physicians in both general and special practice. Chapters are brief but for the most part adequate. The discussions on assessment and treatment of shock, classification and management of hæmatemesis, determination of the possible causes in cases of apoplexy, coronary thrombosis, treatment of status epilepticus, and differential diagnosis and treatment of coma, all are of interest and use to the man in general practice. The part played by the general practitioner in the differential diagnosis and treatment of "the acute abdomen" in adults and children is particularly well presented. Of particular interest to the general practitioner doing obstetrics, as well as to the obstetrician, are discussions on threatened abortion, antepartum hæmorrhage, eclampsia, obstructed labour, postpartum complications, hæmorrhagic disease of the newborn; signs, symptoms and diagnostic procedures are very sketchily covered, but therapy is given in considerable detail. A volume recommended for everyone engaged in general practice.

**PRACTICAL OTOLARYNGOLOGY.** Gervais Ward McAuliffe, Cornell University Medical College. 320 pp. Illust. Landsberger Medical Books, Inc., New York; McGraw-Hill Company of Canada Limited, Toronto, 1957. \$7.35.

This is an easily readable book, with good practical continuity and pleasing style. It is almost devoid of illustrations, and its few sketches are academic. Some procedures and techniques will be considered by many as outdated, and some of the writer's opinions considered biased. This book may be of use to the general practitioner, but requires much shelling to get at the meat. It is neither detailed nor cosmopolitan enough to be of reference calibre.

(Continued on page 58)



## BOOK REVIEWS

(Continued from page 57)

**THE CENTURY OF THE SURGEON.**

Jürgen Thorwald. 432 pp. Illust. Pantheon Books Inc., New York; McClelland &amp; Stewart Limited, Toronto, 1957. \$6.50.

This is surgical history in the grand manner, with all the drama and horrors and no punches pulled. Thorwald begins his story a little before the first use of anaesthesia in 1846 and brings it down to the early years of the present century. The main themes are thus the development of anaesthesia and of asepsis, though he takes side glances at such subjects as plas-

tic surgery, nephrectomy, gastric surgery and appendectomy. The method employed is that of carefully documented historical fiction, for the story is narrated by one Dr. Hartmann, an imaginary physician who began his career just before the discovery of anaesthesia and continued his diletante way through India and Europe, interrogating the masters on their new discoveries. Those who like their histories served up hot with plenty of spice in it will enjoy this book. More sober scholars may well quail at some of the purple patches, though Dr. Thorwald seems to have good authority even for these.

**MEDICAL NEWS in brief**

(Continued from page 358)

**SO-CALLED REFLEX ANURIA**

Acute urinary suppression after ureteral catheterization is not necessarily concerned with reflex nervous activity from the stimulation of the lower urinary tract. Sirota and Narins have recently reported (*New England J. Med.*, 257: 1111, 1957) three cases in which urinary suppression was caused by focal bullous oedema of the bladder mucosa which obstructed the urethra at the orifice. This reaction was thought to be either an idiosyncratic hypersensitivity to trauma or a similar reaction to formaldehyde used in catheter sterilization or to the contrast medium used in radiography. In such cases the obvious treatment is to repeat catheterization and if necessary, to leave indwelling catheters until the oedematous reaction has subsided.

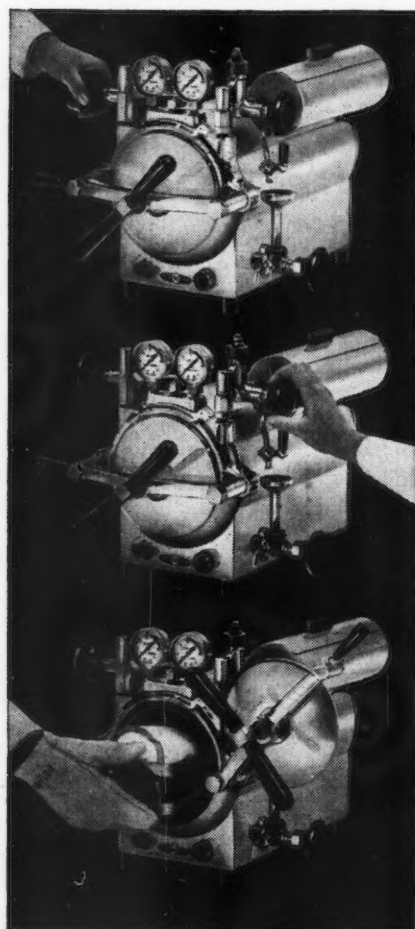
**COMPARATIVE  
RADIOLOGICAL STUDY OF  
CALCIFIED ATHEROMA IN  
MALES AND FEMALES  
OVER 50 YEARS OF AGE**

Radiography of the abdominal aorta is a valuable method of detecting advanced atherosclerosis, and was used to compare the incidence and severity of calcified atheroma in 680 males and 572 females over 50 years of age.

The incidence and severity of calcified atheroma are much less in females than in males below the age of 60, but in the later decades of life the sex ratio is reversed, and women show a much higher percentage of severe calcified atheroma than do men.

The results of this investigation do not support the widely held view of a close relationship between severe atherosclerosis and coronary artery disease in so far as this can be estimated from calcification in the abdominal aorta.

The theory is advanced that spinal osteoporosis occurring after the decrease or cessation of sex-hormone production is connected with the deposition of calcium in the aorta, and that spinal osteoporosis, which is far more common in women than in men, explains the high percentage of severe calcified atheroma in females after the menopause.

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An attempt is made to correlate the cancer-atherosclerosis theory with the results of the above investigation and with reports on the sex susceptibility to cancer at different ages. It has been found that, in women up to the age of 60, the incidence of atherosclerosis is much less than in men; whereas the cancer rate is much larger than in men. In the later age groups, when females show a significantly higher incidence of calcified atheroma than do men, cancer is much more common in males than in females.

The results of this investigation in conjunction with the observations on sex susceptibility to cancer add to the evidence that people with severe calcified atheroma are relatively immune to cancer.—A. Elkes: *Lancet*, 2: 714, 1957.

### THIRD WORLD CONGRESS OF CARDIOLOGY

The Third World Congress of Cardiology will be held September 14-21, 1958, in Brussels, Belgium. The scientific program will include symposia on physiology (contraction, conduction, automatism, regulation), cardiac failure, local circulation, peripheral circulation, coronary circulation, pulmonary circulation, arteriosclerosis, hypertension, collagen diseases, correlation of electrocardiographic and pathologic observations, diagnosis of coronary diseases, normal limits and functional modifications of the ECG, vectorial electrocardiography, radiological methods, congenital heart diseases, acquired valvular diseases, geographic epidemiology and social cardiology. There will also be round table discussions on the surgery of congenital heart disease and acquired heart disease, on chronic pulmonary heart disease, cardiac insufficiency, angina pectoris and myocardial infarction, rheumatic fever, the clinical significance of minor ECG alterations, subacute bacterial endocarditis, peripheral vascular disease, angiocardiology, phonocardiography and pulmonary function in mitral stenosis. Other features include individual communications, plenary conferences, clinico-pathological conferences, film programs and technical and scientific exhibitions.

The social program includes receptions and a banquet, as well as a concert and an opera evening. The meeting will of course coincide with the International Exhibition in Brussels. Registration will close

on May 1, 1958. Further information about the Congress from: Secretariat, 80 rue Mercelis, Brussels, Belgium.

### CANADIAN SOCIETY OF RADIOLOGICAL TECHNICIANS

The Canadian Society of Radiological Technicians announces its 16th annual convention for June 17, 18, 19 and 20, at the Fort Garry Hotel, Winnipeg, Manitoba. There will be refresher courses each day from 8-10 a.m. and business sessions from 10 a.m.-12

noon, while the afternoons will be taken up with technical papers. The convention will cover both radiodiagnosis and radiotherapy. The social program will include a banquet and dance at the Fort Garry Hotel. The chairman of the Committee on Publicity is Mr. J. Enns, R.T., Children's Hospital, Winnipeg 3, Man.

### ROYAL SOCIETY OF HEALTH

The Royal Society of Health of the United Kingdom is preparing  
(Continued on page 60)



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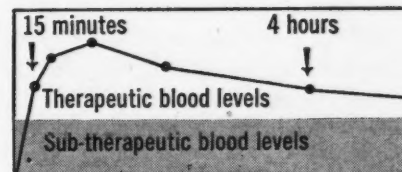
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After two days of therapy the size of doses should be slightly decreased. Each tablespoonful contains: theophylline 80 mg., alcohol 3 cc. Prescription only—bottles of 16 fl. oz.

*Sherman Laboratories*  
Windsor, Ontario

\*Reprints of these studies on request.

## MEDICAL NEWS in brief

(Continued from page 59)

to welcome 3000 delegates to its annual congress to be held in Eastbourne, Sussex, from April 28-May 2, 1958. In addition to the usual conferences and section meetings, there will be a special overseas forum at which papers will be presented by delegates from outside the United Kingdom. Highlights of the congress include a symposium on the implications of the recent report of the Royal Commission on the Law Relating to Mental Illness and Mental Deficiency, a session on world problems of sanitation with WHO participation, a symposium on influenza, a symposium on epidemiology of non-infectious diseases, a symposium on society and its older members, a session on the proper function of an out-patient department and an occupational health symposium on fatigue. Information from the Royal Society of Health, 90 Buckingham Palace Road, London, S.W.1, England.

HEART FAILURE IN  
EXTREME OBESITY

An interesting case report of a very obese man who died in heart failure in spite of apparently adequate treatment is given by M. J. Seide in the *New England J. Med.* (257: 1227, 1957). This syndrome, which is now more frequently recognized, includes marked obesity, somnolence, twitching, cyanosis, periodic respirations, polycythæmia, hypertrophy and failure of the right ventricle. Laboratory tests show the presence of polycythæmia, arterial oxygen unsaturation with increased concentration of arterial carbon dioxide, and diminished tidal volume and alveolar ventilation. The patient had received ammonium chloride, and it is questioned whether or not administration of an acidifying salt had increased his acidosis to an irreversible point, leading to respiratory centre narcosis and death. The greater work required to maintain ventilation in obese persons may lead to shallow breathing which in turn creates hypoxia; this gives rise to polycythæmia and pulmonary hypertension, eventually bringing about right ventricular failure. Carbon dioxide narcosis from increased arterial  $\text{CO}_2$  concentration accounts

for the central nervous system depression. Congestive heart failure in these cases can apparently be reversed through loss of weight. However, this may not be the sole answer since numerous obese persons do not show signs of this syndrome. In the author's opinion, treatment of obesity in these patients should take precedence over that of heart failure; the latter should not include any acidifying

salt or other drug which may increase the latent acidosis.

INSTITUTE OF  
OPHTHALMOLOGY OF  
THE AMERICAS

The New York Eye and Ear Infirmary has recently organized the Institute of Ophthalmology of the Americas in order to make available to interested physicians the hos-



pital, research, clinical and teaching facilities in New York and its environs.

A Bureau of Registration has been set up so that ophthalmologists and other physicians interested in entering the specialty may be made acquainted with activities in their particular field of interest. Courses will be available in the newer methods of diagnosis and treatment in glaucoma, detachment

of the retina, muscular anomalies, as well as other phases of ophthalmic surgery. For example, there will be courses in tonography, binocular indirect ophthalmoscopy, biomicroscopy of the vitreous and fundus, radioisotopes in ophthalmology, pleoptics (treatment of amblyopia) and ocular photography. Information will also be available to those interested in basic research such as histopathology, microbiol-

ogy (including tissue culture), biochemistry, biophysics, and physiology of the eye. The Institute hopes also to foster the exchange of educators, residents and research investigators.

The Institute has received the approval of the Council of the Pan-American Ophthalmological Association. Inquiries regarding the above and any other fields of interest may be addressed to Mrs. Tamar Weber, Executive Secretary, Institute of Ophthalmology of the Americas, New York Eye and Ear Infirmary, 218 Second Ave., New York 3, N.Y.

#### LEDERLE MEDICAL FACULTY AWARDS

The Lederle Laboratories Division, American Cyanamid Company, announces a list of 18 recipients of Lederle Medical Faculty Awards for 1958.

The list includes a 3-year award to Dr. Guy Lamarche, Department of Physiology, Laval University.

These Lederle Medical Faculty Awards are intended for the purpose of strengthening the preclinical departments of medical schools in the United States and Canada by contributing to the support of the teaching and research activities of members of such departments who already have demonstrated high quality of performance but who have not yet attained permanent faculty tenure.

#### ARRHENOBLASTOMA AND VIRILIZATION

Anliker *et al.* have recently succeeded in qualitative and quantitative determination of hormones found in an arrhenoblastoma which the authors had removed operatively from a 24-year-old married woman. For four years before operation, obvious virilization took place. It was most pronounced in elongation of the clitoris, beard growth and progressive deepening of the voice, amenorrhoea and shrinking of breasts. After operation menstruation returned to normal but the secondary virilizing effects were slow in disappearing. Chemical analysis disclosed the presence of testosterone, androsterone, delta-4-androstene-3,17-dione and progesterone. No corticosteroids or oestrogen were found.

Of all virilizing tumours of the ovary, only those having testicular

(Continued on page 62)

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## MEDICAL NEWS in brief (Continued from page 61)

structure should be called arrhenoblastoma. The authors emphasize the need to distinguish hypertrichosis, hirsutism and virilization from one another. Hypertrichosis is independent of hormonal influences, and in ordinary or idiopathic hirsutism no endocrine abnormalities can be detected. Abnormal sensitivity of hair follicles to normal amounts of androgens is assumed to be the cause of this condition, which though it constitutes one of the most frequent causes for endocrinological consultation is not amenable to treatment. If hirsutism is accompanied by amenorrhoea, endocrine investigation is indicated because this is frequently observed in relations of patients with adrenogenital syndrome and may be a transitional form of it; it often responds to cortisone therapy. Virilization always means a serious disease of ovaries or adrenals. In the latter, benign or malignant tumour of hyperplasia of the adrenal cortex causes the adrenogenital syndrome and there is a considerable increase of 17-ketosteroids.

The authors believe that the various clinical pictures in this group are due to variation in the composition of the various hormones produced by the respective tumours. Retropneumoperitoneum and laparoscopy (peritoneoscopy) are diagnostic aids. In difficult cases laparotomy is unavoidable. — H. Winzeler, J. Ruttnier and A. Labhart: *Schweiz. med. Wchnschr.*, 87: 1562, 1957

## POSTGRADUATE COURSES IN NEW YORK

New York University—Bellevue Medical Center's Post-Graduate Medical School offers the following postgraduate courses to be given or started during the month of June 1958: (1) Symposium on Modern Therapeutics in Internal Medicine: a full-time course of ten days' duration, June 9 through 20 (registration also accepted for first or second five days); (2) Management of Chronic Kidney Disease: a full-time course of two days' duration, June 23 and 24; (3) Management of Hypertension: a full-time course of two days' duration, June 25 and 26. Information from New York University—Bellevue Medical Center, New York 16, N.Y.

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## MUCOID IMPACTION OF THE BRONCHI

Mucoid impaction of the bronchi is not uncommon in asthmatic patients. Suppuration occurs beyond the blocked bronchi, and the bronchial wall undergoes destruction. The authors feel that mucoid impaction of the bronchi should be considered in the differential diagnosis of any patient who has a history of asthma and complaints of recurrent respiratory infections associated with hæmoptysis and pain. Out of 36 cases of mucoid impaction of the bronchi, 14 were treated by medical measures and 22 by surgery. In general, medical management was advised for patients with multiple diffuse impactions and surgical removal for those having localized disease. Twelve of the 14 patients treated medically are unimproved. Of the 22 patients operated on, three were asymptomatic and there were one surgical death and one late death due to progressive pulmonary infection. Sixteen of the remaining 17 patients have been definitely improved.—R. R. Shaw *et al.*: *Am. Rev. Tuberc.*, 76: 970, 1957.

(Continued on page 66)



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**MEDICAL NEWS in brief***(Continued from page 62)***LEDERLE MEDICAL  
STUDENT RESEARCH  
FELLOWSHIPS**

The Lederle Laboratories Division of the American Cyanamid Company is making available to medical schools throughout the United States and Canada "Lederle Medical Student Research Fellowships" for 1958. These Fellowships, in amounts not exceeding \$600 per year for any one individual, are intended to relieve in part the

financial burden of students who desire to devote their summer vacations to research in the preclinical departments.

Students who apply for Lederle Medical Student Research Fellowships must be of good scholastic standing and must have the consent of the faculty member under whose supervision their research is to be conducted. The selection of students to receive such awards will be made by the dean of the medical school, or by the regularly constituted committee of the faculty charged with such selections.

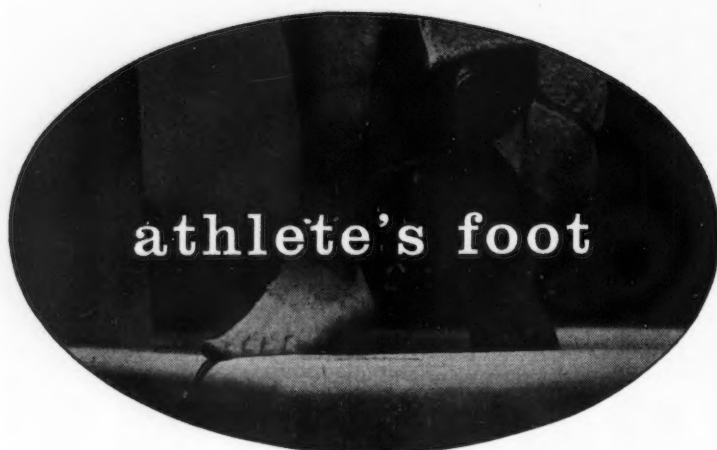
By special permission of the dean or the Fellowship Committee of the school, the student may carry on such research in another medical school provided that satisfactory arrangements are previously made with the faculty member of the school and the department in which the student is to carry on his research.

**A MENTAL DEFICIENCY  
REPORT**

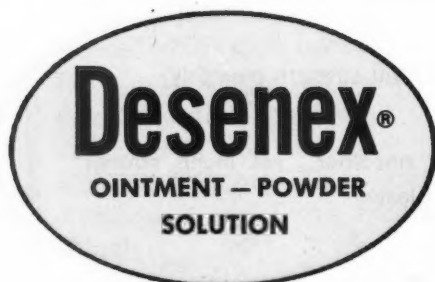
A report entitled "Mental Deficiency in Scotland" has recently been published by a sub-committee of the Standing Medical Advisory Committee to the Department of Health for Scotland. It is worth study by all those interested in mental deficiency. One suggestion which it contains is for the establishment of mental deficiency clinics to serve as key centres in the mental deficiency service. The sub-committee states: "Out-patient clinics, whether on local authority or hospital premises, should provide a diagnostic, advisory and supervisory service for mental defectives, whether children or adults. They could forge a close link with the services for general psychiatry, child psychiatry and child guidance—too often, at present, found working in isolation. They should also be the screening department of the mental deficiency service. A proper system of clinics would help to keep more defectives out of institutions, and assist the after-care and employment services."

In the section of the report on research, the sub-committee deplores the fact that at present little research is being carried out into the problems of mental deficiency. The committee states: "Many clinical, biological and sociological problems await investigation, and much fruitful work could be initiated in such fields as neuropathology, neurophysiology, endocrinology, biochemistry and genetics. The stimulus of active research could rejuvenate many aspects of the mental deficiency service and enable it to play a more significant part in dealing with the social aspects of mental deficiency and psychiatry. The appointment of a university reader in mental deficiency would be a profitable step."

The report is obtainable from Her Majesty's Stationery Office at the price of 1/—.

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